Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 a 1
2. Edition

En

VA 6/100 H 1500 CR 19-3
CR 19-4

supersedes 8.73
company IHC
engine D 358

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,4 mm ± 0,04
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	1000	5,0-5,8	mm		
1 2 Supply pump pressure	1000	5,8-6,3	kp/cm²		
1 3 Full-load delivery without charge-air pressure	1200	73,5-74,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	250	22,0-28,0	cm³/1000 strokes		3,0
1 5 Start	100	mind.84,0	cm³/1000 strokes		
1 6 Full-load speed regulation	1620	16,0-24,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	Start			
	mm	250-380(220-350)	400	1000	1200	1400
		0,3-1,3(0-1,6)	(4,7-6,1)	5,9-6,9(5,6-7,2)	6,9-7,6(6,6-7,9)
2 2 Supply pump	rev/min	200		2000		2500
	kp/cm²	2,0-2,5(1,8-2,7)		(5,6-6,5)		7,3-7,8(7,1-8,0)
Overflow delivery	rev/min	500				1500
	cm³/10 s	55-100(40-110)				35-100(40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1660-1730	0		
		(1640-1750)			
		1620		(15,0-25,0)	
		1510-1530	Beginn		
		1400	73,5-76,5	(72,5-77,5)	
		1200		(73,0-75,0)	
		500	62,0-66,0	(61,0-67,0)	
	Stop	1500	0		
Idle stop	Full	360-420	0		
		(340-440)		(21,0-29,0)	
	Start	100	mind. 84,0		
End stop		220-320			

A1

A1

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 55 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV= 2,0 mm Dimension V= 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 HAN 3,1 c 1

2. Edition

En

VA 4/100 H 1150 CR 55

supersedes 5,75

company Hanomag

engine D 142 K

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1 mm ± 0,02 (± 0,04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	900	1,7-2,5	mm		
1.2 Supply pump pressure	900	4,8-5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	55,0-56,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0	cm³/1000 strokes		
1.5 Start	100	mind.75,0	cm³/1000 strokes		3,0
1.6 Full-load speed regulation	1200	21,0-29,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600-730(570-760)	900	950-1050
	mm	Start	(1,4-2,8)	2,5-3,2(2,2-3,5)
2.2 Supply pump	rev/min	200	900	1150
	kp/cm²	1,4-1,9(1,2-2,1)	(4,6-5,5)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min	500		1150
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1200-1290 (1180-1310)	0		
		1200		(20,0-30,5)	
		1130	44,5-47,5	(43,5-48,5)	
		800		(54,5-56,5)	
		500	44,0-47,0	(43,0-48,0)	
	Stop	1150	0		
Idle stop	Full	330-410 (310-430)	0		
		300		(6,0-14,0)	
	Start	100	mind.75,0		
End stop		150-250			

A3

A3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 4,5 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 H A N 3,1 d 2
2. Edition

En

VA 4/100 H 1200 CR 58
0 460 304 163

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 5.75
company Hanomag
engine D 142 E 1/7

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,1 mm ± 0,02 (± 0,04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	1,3-2,1	mm		
1.2 Supply pump pressure	800	4,2-4,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	52,0-53,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	---	cm³/1000 strokes		
1.4 Idle speed regulation	300	20,0-26,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1250	33,0-41,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	580-700(550-730)	800	830-960
	mm	Start	(1,0-2,4)	2,5-3,2(2,2-3,5)
2.2 Supply pump	rev/min	200	800	1200
	kp/cm²	1,1-1,6(0,3-1,8)	(4,0-4,9)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500		1200
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1290-1340 (1270-1360)	0		
		1250		(32,0-42,0)	
		1180	50,5-53,5	(49,5-54,5)	
		800		(51,5-53,5)	
		500	49,5-52,5	(48,5-53,5)	
	Stop	1200	0		
Idle stop	Full	400-450 (380-470)	0		
		300		(19,0-27,0)	
	Start	100	mind. 80,0		
End stop		150-250			

A5

BOSCH Geschäftsbereich KH. Kur ...enst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV 3,0 mm Dimension V 24,5 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 SAV 5,2 b 2
1. Edition
En

VA 6/110 H 1450 CR 169-2
0 460 316 021

supersedes
company Saviem
engine 798-40

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,4 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings

	rev/min	Settings	Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	4,9-5,9 mm	0	
1.2 Supply pump pressure	1000	5,5-6,0 kp/cm²	0	
1.3 Full-load delivery without charge-air pressure	500	60,0-63,0 cm³/1000 strokes	0	2,5
Full-load delivery with charge-air pressure	900	80,0-81,0 cm³/1000 strokes	0,48	
1.4 Idle speed regulation	300	12,0-18,0 cm³/1000 strokes	0	3,0
1.5 Start	100	mind.100,0 cm³/1000 strokes	0	
1.6 Full-load speed regulation	1550	36,0-44,0 cm³/1000 strokes	0,68	

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	450-550(420-580)	650	1000	1050-1200
	mm	Start	1,2-2,1(0,8-2,4)	(4,6-6,2)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		1000	1450
	kp/cm²	1,4-1,9(1,2-2,1)		(5,3-6,2)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min	500			1450
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Dclivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1650-1710 (1630-1730)	0		0,68
		1550		(35,0-45,0)	0,68
		1480-1520	Start		
		1450	76,5-79,5	(75,5-80,5)	0,68
		900		(79,5-81,5)	0,48
		750		(73,0-75,0)	0,35
		500	60,0-63,0	(59,0-64,0)	0
	Stop		0		
Idle stop	Full	370-420 (350-440)	0		
		300		(11,0-19,0)	
	Start	100	mind. 100,0		
End stop		110-220			

A7

A17

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV= 5,0 mm Dimension V=24,6 mm

A8

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2 c
2. Edition

En

VA 6/110 H 1450 CR 169-3
0 460 316 025

supersedes 5.75
company Saviem
engine 798

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

Pre-stroke setting 0,4 mm ± 0,02 (± 0,04)

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	4,9-5,9	mm	0	
1.2 Supply pump pressure	1000	5,5-6,0	kp/cm²	0	
1.3 Full-load delivery without charge-air pressure	500	60,0-63,0	cm³/1000 strokes	0	2,5
Full-load delivery with charge-air pressure	1250	85,5-86,5	cm³/1000 strokes	0,48	
1.4 Idle speed regulation	300	12,0-18,0	cm³/1000 strokes	0	3,0
1.5 Start	100	mind.100,0	cm³/1000 strokes	0	3,0
1.6 Full-load speed regulation	1550	36,0-44,0	cm³/1000 strokes	0,68	

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	450-550(420-580)	650	1000	1050-1200
	mm	Start	1,1-2,1(0,8-2,4)	(4,6-6,2)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		1000	1450
	kp/cm²	1,4-1,9(1,2-2,1)		(5,3-6,2)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min	500			1450
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1650-1680 (1630-1700)	max. 7,0		0,68
		1500		(35,0-45,0)	0,68
		1480-1500	Start		
		1450	81,0-84,0	(80,0-85,0)	0,68
		1250		(85,0-87,0)	0,60
		1000	max. 84,0		0,42
		500		(60,0-64,0)	0
	Stop	1450	0		
Idle stop	Full	370-420 (350-440)	0		
		300		(11,0-19,0)	
	Start	100	mind. 100,0		
End stop		120-220			

A9

BOSCH

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,6 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 SAV 5,2 d

2. Edition

En

VA 6/110 H 1450 CR 169-4
0 460 316 035

supersedes 12.78
company Saviem
engine 798 Marine

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,4 mm ± 0,02(±0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	4,9-5,9	mm	0	
1.2 Supply pump pressure	1000	5,5-6,0	kp/cm²	0	
1.3 Full-load delivery without charge-air pressure	500	62,5-63,5	cm³/1000 strokes	0	2,5
Full-load delivery with charge-air pressure	1100	103,5-104,5	cm³/1000 strokes	0,73	
1.4 Idle speed regulation	300	12,0-18,0	cm³/1000 strokes	0	3,0
1.5 Start	100	mind. 100,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	1550	76,0-84,0	cm³/1000 strokes	0,73	

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	450-550(420-580)	650	1000	1050-1200
	mm	Start	1,2-2,1(0,8-2,4)	(4,6-6,2)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		1000	1450
	kp/cm²	1,4-1,9(1,2-2,1)		(5,3-6,2)	7,1-7,6(6,9-7,8)
Overflow delivery	rev/min	500			1450
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1730	7,0		0,73
		1550		(75,0-85,0)	0,73
		1450	99,5-102,5	(98,5-103,5)	0,73
		1100		(103,0-105,0)	0,73
		1100	64,5-67,5	(63,5-68,5)	0
		500	80,5-84,5	(79,5-85,5)	0,3
		500		(62,0-64,0)	0
	Stop	1450	0		
Idle stop	Full	370-420 (350-440)	0		
		300		(11,0-19,0)	
	Start	100	mind. 100,0		
End stop		120-220			

A11

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,6 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 PEU 2,1 e
2. Edition

En

VA 4(90 H 2250 CR 170
0 460 394 012

supersedes 11.73
company Peugeot
engine XDP 4/90

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0 mm ± 0,02(± 0,04)

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	2000	5,8-6,2	mm		
1 2 Supply pump pressure	2000	5,6-6,1	kp/cm²		
1 3 Full-load delivery without charge-air pressure	1400	37,5-38,5	cm³/1000 strokes		1,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	330	10,0-14,0	cm³/1000 strokes		3,0
1 5 Start	100	mind.70,0	cm³/1000 strokes		
1 6 Full-load speed regulation	2350	12,0-18,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start			
	mm	--	1000	1600	2000	2200-2400
		0,7-1,7(0,4-2,0)	3,7-4,5(3,4-4,8)	(5,3-6,4)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200		2000	
	kp/cm²	1,0-1,5(0,8-1,7)		(5,4-6,3)	
Overflow delivery	rev/min	500			2250
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge-air pressure kp/cm²
End stop	Full	2450	max. 9,0	
		2350	(11,0-19,0)	
		2200	32,75-35,25 (31,75-36,25)	
		1400	(37,0-39,0)	
		850	30,25-32,75 (29,25-33,75)	
		500	30,25-32,75 (29,25-33,75)	
	Stop	2250	0	
Idle stop	Full	400-460 (380-480)	0	
		330	(10,0-14,0)	
	Start	100	mind. 70,0	
End stop		150-250		

A13

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 30 ± 4° β ± 8° γ = 18 + 2° δ = - 6°	Pump Dimension IV = 2,0 mm Dimension V = 25,0 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 SAV 5,2b
3. Edition

En

VA 6/110H 1400 CR 169
0 460 316 015

supersedes 10.74
company Saviem
engine 798-11

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,4 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	4,9-5,9	mm	0	
1.2 Supply pump pressure	1000	5,5-6,0	kp/cm²	0	
1.3 Full-load delivery without charge-air pressure	500	60,0-63,0	cm³/1000 strokes	0	2,5
Full-load delivery with charge-air pressure	900	80,0-81,0	cm³/1000 strokes	0,48	
1.4 Idle speed regulation	300	12,0-18,0	cm³/1000 strokes	0	3,0
1.5 Start	100	mind.100,0	cm³/1000 strokes	0	
1.6 Full-load speed regulation	1500	36,0-44,0	cm³/1000 strokes	0,68	

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	450-550(420-580)	650	1000	1050-1200
	mm	Start	1,1-2,1(0,8-2,4)	(4,6-6,2)	6,1-6,8(5,8-7,1)
		200	1000		1400
2.2 Supply pump	rev/min				
	kp/cm²	1,4-1,9(1,2-2,1)	5,5-6,0(5,3-6,2)		7,1-7,7(6,9-7,8)
Overflow delivery	rev/min	500			1400
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1600-1650	0		0,68
		(1580-1670)			
		1500		(35,0-45,0)	0,68
		1420-1480	Start		
		1400	76,0-79,0	(75,0-80,0)	0,68
		900	80,0-81,0	(79,5-81,5)	0,48
		750		(73,0-75,0)	0,35
		500	60,0-63,0	(59,0-64,0)	0
	Stop	1400	0		
Idle stop	Full	370-420	0		
		(350-440)			
		300		(11,0-19,0)	
	Start	100	mind.100,0		
End stop		110-220			

A15

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 ± 8° δ = 60 ± 8°	Pump Dimension IV = 5,0 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 MAN 3,3a
2.Edition
En

Test-ISO 4113

VA 6/100 H 1500 CR 181
0 460 306 196

supersedes 12.74
company MAN
engine D 0216 MXUL

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	2,8-3,8	mm		
1.2 Supply pump pressure	800	4,6-5,1	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	57,5-58,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind. 80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1600	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start	600	800	1200	1310-1440
	mm	400-520(370-550)				
		0,9-1,9(0,6-2,2)	(2,5-4,1)	5,6-6,6	(5,3-6,9)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200		800		1500
	kp/cm²	1,6-2,1(1,4-2,3)		(4,4-5,3)		7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500				1500
	cm³/10 s	55-100(40-110)				55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1630-1730 (1610-1750)	0		
		1600		(25,0-35,0)	
		1500-1540	Start		
		1480	58,5-61,5	(57,5-62,5)	
		900		(57,0-59,0)	
		500	47,5-52,5	(46,5-53,5)	
	Stop	1500	0		
Idle stop	Full	400-460 (380-480)	0		
		300		(11,0-19,0)	
	Start	100	mind. 80,0		
End stop		110-210			

A17

A17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4°$ $\beta = 55 \pm 8°$ $\gamma = 30 - 8°$ $\delta = 60 + 8°$	Pump Dimension $\bar{IV}$ 4,0 mm Dimension $\bar{V}$ 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8c 1
1. Edition
En

VA 6/110 H 1100 BR 47-1
0 460 316 007

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes
company IHC
engine D 358 TC

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	6,0-7,0	mm		
1.2 Supply pump pressure	700	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	67,5-70,5	cm³/1000 strokes	0 bar	2,5
Full-load delivery with charge-air pressure	900	77,0-78,0	cm³/1000 strokes	0,5 bar	
1.4 Idle speed regulation	300	12,0-18,0	cm³/1000 strokes	---	3,0
1.5 Start	100	mind.100	cm³/1000 strokes	---	
1.6 Full-load speed regulation	1200	31,0-39,0	cm³/1000 strokes	0,5 bar	

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450 (270-480)	700	930-970
	mm	Start	(5,7-7,3)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	700	1100
	kp/cm²	1,5-2,0(1,3-2,2)	(5,1-6,0)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500		1100
	cm³/10 s	55-125(40-140)		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1230-1280 (1210-1300)	0		0,5 bar
		1200		(30,0-40,0)	0,5 bar
		1100	76,5-79,5	(75,5-80,5)	0,5 bar
		900		(76,5-78,5)	0,5 bar
		700	69,5-71,5	(68,5-72,5)	0,4 bar
		400	54,0-57,0	(53,0-58,0)	0,1 bar
	Stop	1100	0		
Idle stop	Full	360-420 (340-440)	0	(11,0-19,0)	
	Start	100	mind. 100		
End stop		150	mind. 100		
		500	max. 45,0		

A19

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 3,5 mm Dimension V = - mm

LDA
Start of timing advance 60 - 70 mmHg
End of timing advance 350

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 2,3 a 5

1. Edition

En

VA 4/110 H 1100 BL 136-1

0 460 314 007

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes

company Fiat

engine 854.10

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm

Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	6,8-7,8	mm		
1.2 Supply pump pressure	800	4,8-5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	60,0-61,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	---	cm³/1000 strokes		
1.4 Idle speed regulation	340	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.130	cm³/1000 strokes		
1.6 Full-load speed regulation	1170	42,0-48,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-500(320-530)	800	1000-1150
	mm	Start	(6,5-8,1)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	800	1100
	kp/cm²	0,8-1,3(0,6-1,5	(4,6-5,5)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500		1000
	cm³/10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1210-1260	0		
		1170		(41,0-49,0)	
		1100	57,0-60,0	(56,0-61,0)	
		800		(59,5-61,5)	
		500	58,0-61,0	(57,0-62,0)	
	Stop	1100	0		
Idle stop	Full	380-430 (360-450)	0		
		340		(16,0-24,0)	
End stop	Start	100	mind. 130		
		130-230			

A21

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 35 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,1 i 2
1. Edition
En

VA 6/100 H 1150 BR 79
0 460 306 154

supersedes
company IHC
engine D 310

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,8-5,8	mm		
1.2 Supply pump pressure	800	1,2-1,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	58,5-59,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1250	21,0-29,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-550 (370-580)	800	950-1100
	mm	Start	(4,5-6,1)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	800	1150
	kp/cm²	1,5-2,0(1,3-2,2)	(1,0-1,9)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500		1150
	cm³/10 s	mind. 25		55-125(40-125)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1270-1340	0		
		(1250-1360)			
		1250		(20,0-30,0)	
		1160-1190	Start		
		1130	56,0-59,0	(55,0-60,0)	
		800		(58,0-60,0)	
		500	52,5-55,5	(51,5-56,5)	
	Stop	1150	0		
Idle stop	Full	340-390	0		
		(320-410)			
		300		(6,0-14,0)	
	Start	100	mind.90,0		
		500	max. 35,0		
End stop		mind. 150			

A23

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 7,0 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 v
1. Edition

En

VA 4/100 H 1250 BR 77
0 460 304 164

supersedes
company IHC
engine D 239

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	800	8,8-9,8	mm		
1 2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1 3 Full-load delivery without charge-air pressure	800	67,5-68,5	cm³/1000 strokes		
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		
1 5 Start	100	mind.90,0	cm³/1000 strokes		
1 6 Full-load speed regulation	330	28,5-36,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	200-350(170-380)	800	1050-1200
	mm	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2 2 Supply pump	rev/min	100	800	1250
	kp/cm²	1,3-1,8(1,1-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500		1250
	cm³/10 s	mind. 25		55-125(40-140)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1400	0		
		(1330-1420)			
		1330		(27,5-37,5)	
		1200	63,0-66,0	(62,0-67,0)	
		800		(67,0-69,0)	
		500	64,5-67,5	(63,5-68,5)	
	Stop	1250	0		
Idle stop	Full	390-440	0		
		(370-460)			
		350		(11,0-19,0)	
	Start	100	mind. 90,0		
		500	35,0-60,0	(34,0-61,0)	
End stop		mind. 180			

B1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = - mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,9 d 3
1. Edition
En

VA 4/100 H 1150 BR 69-1

supersedes
company IHC
engine D 239

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm

Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	6,8-7,8	mm		
1.2 Supply pump pressure	700	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	72,0-73,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (mech.)	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1200	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	230-400 (200-430)	700	920-1090
	mm	Start	(6,5-8,1)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	700	1150
	kp/cm²	1,3-1,8(1,1-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500		1150
	cm³/10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1230	max. 10,0		
		1200		(25,0-35,0)	
		1120	72,0-75,0	(71,0-76,0)	
		800		(71,5-73,5)	
		500	65,5-68,5	(64,5-69,5)	
	Stop	1150	0		
Idle stop	Full	390-450 (370-470)	0		
		350		(11,0-19,0)	
End stop	Start	100 mind.180	mind. 90,0		

B3

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 3,0 mm Dimension V = - mm

B4

En

14

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 d 2

1. Edition

En

VA 4/100 H 1100 BR 69

0 460 304 133

supersedes

company IHC

engine D 239

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm

Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	6,5-7,5	mm		
1.2 Supply pump pressure	700	4,8-5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	69,0-70,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (mech.)	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1150	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	230-400 (200-430)	700	1100
	mm	Start	(6,2-7,8)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	700	1100
	kp/cm²	1,4-1,9(1,2-2,1)	(4,6-5,5)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1180-1250	0		
		(1160-1270)			
		1150		(35,0-45,0)	
		1050	68,0-71,0	(67,0-72,0)	
		800		(68,5-70,5)	
		500	62,0-65,0	(61,0-66,0)	
	Stop	1100	0		
Idle stop	Full	390-450	0		
		(370-470)			
		350		(11,0-19,0)	
	Start	100			
		500	mind. 90,0		
End stop		mind.180	30,0-60,0	(29,0-61,0)	

B5

35

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 3,0 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5d 1

1. Edition

En

VA 4/100 H 1250 BR 68-1 P
0 460 304 127 ..128

supersedes
company IHC
engine D 206

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	8,8-9,8	mm		
1.2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	53,0 54,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350 (170-380)	800	1050-1200
	mm	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm²	1,3-1,8(1,1-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge-air pressure kp/cm²
End stop	Full	1320-1370	0	
		(1300-1390)		
		1300	(30,0-40,0)	
		1200	48,5-51,5 (47,5-52,5)	
		800	(52,5-54,5)	
		500	43,5-46,5 (42,5-47,5)	
	Stop	1250	0	
Idle stop	Full	390-440	0	
		(370-460)		
		350	(11,0-19,0)	
	Start	100	mind. 90,0	
		500	max.30,0-45,0	
End stop		mind.180		

B7

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,5 d
2. Edition
En

VA 4/100 H 1250 BR 68

supersedes 6.70
company IHC
engine D 206

Testoil-ISO 4113

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings	Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	8,8-9,8 mm		
1.2 Supply pump pressure	800	4,9-5,4 kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	57,0-58,0 cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0 cm³/1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.90,0 cm³/1000 strokes		
1.6 Full-load speed regulation	1300	38,0-46,0 cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	800	1050-1200
	mm	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm²	1,3-1,8(1,1-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge-air pressure kp/cm²
End stop	Full	1330-1380 (1310-1400)	0	
		1300	(37,0-47,0)	
		1200	56,5-59,5 (55,5-60,5)	
		800	(56,5-58,5)	
		500	49,5-52,5 (48,5-53,5)	
	Stop	1250	0	
Idle stop	Full	390-440 (370-460)	0	
		350	(11,0-19,0)	
	Start	100	mind. 90,0	
		500	max. 30,0-50,0	
End stop		mind. 180		

B9

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,9 c2
1. Edition
En

VA 4/100 H 1250 BR 67-1

supersedes
company IHC
engine D 239

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	8,8-9,8	mm		
1.2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	---	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	44,0-52,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	800	1050-1200
	mm	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm²	1,3-1,8(1,1-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1400	0		
		(1330-1420)			
		1300		(43,0-53,0)	
		1200	65,5-68,5	(64,5-69,5)	
		800		(69,0-71,0)	
		500	64,5-67,5	(63,5-68,5)	
	Stop	1250	0		
Idle stop	Full	390-440			
		(370-460)	0		
		350		(11,0-19,0)	
	Start	100	mind. 90,0		
		500	35,0-65,0	(34,0-66,0)	
End stop		mind.180			

B11

Angle to the stop-plate	Pre-setting dimension
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 b
3. Edition

En

VA 4/100 H 1100 BR 12-6 P . Nozzle-and-holder assembly
0 460 304 111 .. 112 1 688 901 020 (172 + 3 bar)

supersedes 11.73
company IHC
engine D 239-WW 50 6 D

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ±0,02 (± 0,04)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	7,5-8,5	mm		
1.2 Supply pump pressure	700	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	68,0-69,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.85,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1150	41,0-49,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	700	850-1000
	mm	Start	(7,3-8,8)	11,7-12,5(11,4-12,8)
2.2 Supply pump	rev/min	100	700	1100
	kp/cm²	1,3-1,8(1,1-2,0)	(4,3-5,2)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1100
	cm³/10 s	--		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1200-1300	0		
		(1180-1320)			
		1150		(40,0-50,0)	
		Maximal delivery		(69,0-75,0)	
		1050	66,5-68,5	(65,5-69,5)	
		900		(67,5-69,5)	
		500	63,5-66,5	(62,5-67,5)	
	Stop	1100	0		
Idle stop	Full	390-450	0		
		(370-470)			
		350		(11,0-19,0)	
	Start	100	mind. 85,0		
		500	30,0-60,0	(34,0-61,0)	
End stop		mind.150			

B13

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 5,0 mm Dimension V = - mm

BAY

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 b 3

1. Edition

En

VA 4/100 H 1050 BR 12-8 P

0 460 304 156 .. 157

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes
company IHC
engine: D 206 100 B-Lader

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02(± 0,04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	8,0-9,0	mm		
1.2 Supply pump pressure	800	5,7-6,2	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	64,0-65,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	360	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1100	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	150-300(120-330)	800	900-1020
	mm	Start	(7,7-9,3)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	800	1050
	kp/cm²	1,5-2,0(1,3-2,2)	(5,5-6,4)	6,6-7,1(6,4-7,3)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind.25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1140-1190			
		(1120-1210)			
		1100		(30,0-40,0)	
		1000	63,5-65,5	(62,5-66,5)	
		900		(63,5-65,5)	
		500	56,0-59,0	(55,0-60,0)	
	Stop	1050	0		
Idle stop	Full	400-450	0		
		(380-470)			
		360		(11,0-19,0)	
	Start	100	mind.90,0		
		500	35,0-57,0	(34,0-58,0)	
End stop		mind.160			

B15

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α ≃ 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 5,0 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8 a
3. Edition
En

VA 6/100 H 1500 BR 19-1
0 460 306 084 · Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 12.70
company IHC
engine XDD 358

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	8,5-9,5	mm		
1.2 Supply pump pressure	1000	5,2-5,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1200	76,0-77,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	22,0-28,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1600	31,0-39,0	cm³/1000 strokes		-

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-500(270-530)	1000	1250-1410
	mm	Start	(8,2-9,8)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	1000	1500
	kp/cm²	1,0-1,5(0,8-1,7)	(5,0-5,9)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500		1500
	cm³/10 s	mind. 25		85-155(70-170)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1680-1780 (1660-1800)	0		
		1600		(30,0-40,0)	
		1400	74,0-80,0	(73,0-81,0)	
		1200		(75,5-77,5)	
		900	71,0-74,0	(70,0-75,0)	
		500	62,0-66,0	(61,0-67,0)	
	Stop	--	0		
Idle stop	Full	350-410 (330-430)	0		
		250		(21,0-29,0)	
	Start	100	mind.90,0		
		180	mind.90,0		
End stop		500	max. 60,0		

B17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 60 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump = 1,5 mm Dimension IV = - mm Dimension V Dimension I = 7,0 mm Dimension II = 14,0 mm Dimension III = 34,8 mm

B18...

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 2,4a 5

1. Edition

En

VA 3/100 H 950 BR 9-2

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes IHC
company
engine D 155

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	500	7,1-8,1	mm		
1.2 Supply pump pressure	500	5,0-5,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	700	58,5-59,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	15,0-21,0	cm³/1000 strokes		3,5
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1000	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	120-270(100-290)	500	700-850
	mm	Start	(6,8-8,4)	12,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min	100	500	950
	kp/cm²	2,2-2,7(2,0-2,9)	(4,8-5,7)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		950
	cm³/10 s	mind. 27		55-125(40-135)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1020-1070	0		
		(1000-1090)			
		1000		(35,0-45,0)	
		930	62,5-65,5	(61,5-66,5)	
		700		(58,0-60,0)	
		500	53,0-56,0	(52,0-57,0)	
	Stop	950	0		
Idle stop	Full	460-510	0		
		(440-530)			
		400		(14,0-22,0)	
		500	34,0-48,0	(33,0-49,0)	
	Start	100	mind. 90,0		
End stop		mind. 180			

B19

B19

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,0 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,4a 6
1. Edition
En

VA 3/100 H 1150 BR 9-3 · Nozzle-and-holder assembly
1100 BR 9-4 1 688 901 020 (172 + 3 bar)

supersedes
company IHC
engine D 155

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm

Testoil-ISO 4113

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	8,8-9,6	mm		
1.2 Supply pump pressure	700	5,9-6,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	63,0-64,0	cm³/1000 strokes		
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		
1.5 Start 196 bar	100	mind. 87,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1150	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	700	880-1030
	mm	Start	(8,5-9,9)	12,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min	100	700	1150
	kp/cm²	1,5-2,0(1,3-2,2)	(5,7-6,6)	7,3-7,8(7,1-8,0)
Overflow delivery	rev/min	500	700	1150
	cm³/10 s	55-125(40-135)	55-125(40-135)	55-125(40-135)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1180-1230 (1160-1250)	0		
		1150		(35,0-45,0)	
		1080	68,5-71,5	(67,5-72,5)	
		800		(62,5-64,5)	
		500	57,5-60,5	(56,5-61,5)	
	Stop	1150	0		
Idle stop	Full	430-440 (410-420)	0		
		300		(16,0-24,0)	
	Start	100	mind. 87,0		
End stop		mind. 180			

B21

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 6,0 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 2,4 a 1
1. Edition
En

VA 3/90 H 1200 CR 172-1
0 460 393 008

supersedes
company Steyr
engine WD 308.41

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	1,4-2,2	mm		
1.2 Supply pump pressure	800	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1180	60,5-61,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5	cm³/1000 strokes		3,0
1.5 Start	100	mind.70,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	420-570(390-600)	600	800	920-1170
	mm	Start	0,3-1,3(0-1,6)	(1,1-2,5)	2,4-3,1(2,1-3,4)
2.2 Supply pump	rev/min	200		800	1200
	kp/cm²	1,6-2,1(1,3-2,4)		(4,3-5,2)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500			1200
	cm³/10 s	55-100(40-110			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes	Charge-air pressure kp/cm²
End stop	Full	1360-1420 (1340-1440)	0	
		1300	(25,0-35,0)	
		1240-1270	Beginn	
		1180	(60,0-62,0)	
		800	60,25-62,75(59,25-63,75)	
		500	60,5 -63,5 (59,5-64,5)	
	Stop	1200	0	
Idle stop	Full	400-450 (380-470)	0	
		300	(8,5-16,5)	
	Start	100	mind.70,0	
End stop		120-220		

B23

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 4,0 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

En

WPP 001/4 IHC 2,9 a
2. Edition

VA 3/100 H 1050 BR 11 Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 6.66
company IHC
engine D 179

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	7,6-8,6	mm		
1.2 Supply pump pressure	700	5,0-5,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	64,5-65,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	23,5-29,5	cm³/1000 strokes		3,0
1.5 Start (mec.) 196 bar	100	mind.95,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1100	41,0-49,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	250-400(220-430)	700	950-1100
	mm	Start	(7,3-8,9)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	700	1050
	kp/cm²	1,5-2,0(1,3-2,2)	(4,8-5,7)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500	1000	1050
	cm³/10 s	mind. 27	55-125(40-135)	55-125(40-135)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1140-1200 (1120-1220)	0		
		1100		(40,0-50,0)	
		1030	68,5-71,5	(67,5-72,5)	
		800		(64,0-66,0)	
		500	58,5-60,5	(57,5-61,5)	
	Stop	1050	0		
Idle stop	Full	310-360 (290-380)	0		
		250		(22,5-30,5)	
	Start	500	max. 56,0		
End stop		100	mind.95,0		
		mind. 150			

C1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 6° δ = 60 ± 8°	Pump Dimension IV = - mm Dimension V = - mm

Re Item 4: Adjustment of spring-loaded starting/shutoff stop

Set start position at pump, i.e.: move speed-control lever to idle stop, move injected-quantity control lever to start position and test starting fuel delivery at stated cranking speed.

If control spool is installed correctly, starting fuel delivery must switch to full-load delivery before max. engine-speed stop is reached. Otherwise, control spool is to be turned through 180°.

Then set spring-loaded starting/shutoff stop without overriding spring in stop housing.

Note:
With stop check, spring-loaded stop is overriden and zero delivery must be attained.

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 4,0 a
2. Edition

En

VA 4/100 H 1200 BR 145
0 460 304 069

supersedes 6.70
company Steyr
engine WD 410 t

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

Pre-stroke setting 0,3 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,8-5,9	mm		
1.2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	62,0-63,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	16,0-22,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1270	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-550(370-580)	800	1000-1150
	mm	Start	(4,5-6,1)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	800	1200
	kp/cm²	1,1-1,6(0,9-1,8)	(4,7-5,6)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500		1000
	cm³/10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1310-1360	0		
		(1290-1380)			
		1270		(35,0-45,0)	
		1150	63,0-66,5	(62,5-67,5)	
		800		(61,5-63,5)	
		500	60,5-63,5	(59,5-64,5)	
	Stop	1200	0		
Idle stop	Full	320-380			
		(300-400)			
		250		(15,0-23,0)	
	Start	100	mind.80,0		
End stop		110-210			

C3

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

C3

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 6,0 mm Dimension V = - mm

C4

En

C4

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5 b
2. Edition

En

VA 4/100 1250 BR 8-1
0 460 304 077

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 6.69
company IHC
engine D 206 / 8-41

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	6,3-7,3	mm		
1.2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	62,0-63,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	22,0-28,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind. 85,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1290	46,0-54,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-500(320-530)	800	1030-1170
	mm	Start	(6,0-7,6)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm²	1,0-1,5(0,8-1,7)	(4,7-5,6)	6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	500	1000	1250
	cm³/10 s	mind. 27	55-125(40-135)	55-125(40-135)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1390 (1330-1410)	0		
		1370	max. 5,0		
		1290		(45,0-55,0)	
		1200	64,5-67,5	(63,5-68,5)	
		800		(61,5-63,5)	
		500	54,5-57,5	(53,5-58,5)	
	Stop	1250	0		
Idle stop	Full	480-530 (460-550)	0		
		400		(21,0-29,0)	
	Start	100	mind. 85,0		
		500	35,0-50,0	(34,0-51,0)	

End stop

C5

C5

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump BR 8-1 Dimension IV = 4,0 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 MWM 5,1a
2. Edition

En

VA 6/100 H 1150 BR 35
0 460 306 068

supersedes 12.68
company MWM
engine D 225

Testoil-ISO 4113

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,4 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	5,5-6,5	mm		
1.2 Supply pump pressure	700	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1100	54,5-55,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5	cm³/1000 strokes		3,0
1.5 Start (mec.)	100	mind. 70,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1190	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	220-380(190-410)	700	920-1080
	mm	Start	(5,2-6,8)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	700	1150
	kp/cm²	1,5-2,0(1,3-2,2)	(4,7-5,6)	6,4-6,9(6,2-7,1)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind.25	55-100(40-110)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1240-1290	0		
		(1220-1310)			
		1190		(30,0-40,0)	
		1100		(54,0-56,0)	
		900	57,5-59,5	(56,5-60,5)	
		500	43,0-47,0	(42,0-49,0)	
	Stop	1150	0		
Idle stop	Full	370-430	0		
		(350-450)			
		300		(8,5-16,5)	
	Start	100	mind.70,0		
		500	max. 37,5		
End stop		mind. 150			

C7

10.81

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = - mm Dimension V = - mm Dimensions for pre-setting Dimension I = Dimension II = According to the wear-parts list Dimension III = 34,4 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,1 c 1
3. Edition
En

Testoil-ISO 4113

VA 6/100 H 1500 CR 20

supersedes 10.76
company IHC
engine D 310

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,4 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	4,5-5,5	mm		
1.2 Supply pump pressure	1000	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1200	65,5-66,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.75,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1580	18,5-26,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	480-650 (450-680)	1000	1400
	mm	Start	(4,2-5,3)	7,9-8,6(7,6-8,9)
2.2 Supply pump	rev/min	200	1000	1500
	kp/cm²	0,9-1,4(0,7-1,6)	(4,3-5,2)	6,7-7,2(6,5-7,3)
Overflow delivery	rev/min	500		1500
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1650-1750 (1630-1770)	0		
		1580		(17,5-27,5)	
		1480-1500	Start		
		1400	65,0-68,0	(64,0-69,0)	
		1200		(65,0-67,0)	
		500	52,0-56,0	(51,0-57,0)	
	Stop	1500	0		
Idle stop	Full	300-400 (280-420)	0		
		250		(11,0-19,0)	
	Start	100	mind. 75,0		
End stop		220-300			

C9

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 55 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 1,0 mm Dimension V = 25,0 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8 d 2
1. Edition
En

Testoil-ISO 4113

VA 6/100 H 1050 BR 21-2 Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)
0 460 306 117

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02(± 0,04)

supersedes
company I H C
engine D 358

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	7,3-8,3	mm		
1.2 Supply pump pressure	800	5,7-6,2	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	65,0-66,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.85,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1130	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450(270-480)	800	880-1020
	mm	Start	(7,0-8,6)	9,7-10,4(9,4-10,7)
		100	800	1050
2.2 Supply pump	rev/min			
	kp/cm²	1,8-2,3(1,6-2,5)	(5,5-6,4)	6,7-7,2(6,5-7,4)
			1000	
Overflow delivery	rev/min			
	cm³/10 s		27-55(13-70)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1150-1220 (1130-1240)	0		
		1130		(30,0-40,0)	
		1000	67,5-70,5	(66,5-71,5)	
		800		(64,5-66,5)	
		500	66,5-69,5	(65,5-70,5)	
	Stop	1050	0		
Idle stop	Full	400-460 (380-480)	0		
		300		(11,0-19,0)	
		100	mind. 85,0		
	Start	500	30,0-65,0	(29,0-66,0)	
End stop		mind.180			

C11

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 ± 8° δ = 60 ± 8°	Pump Dimension IV = 4,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 d
2. Edition

En

Testoil-ISO 4113

VA 6/100 H 1200 BR 21-1 -P
0 460 306 110

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

supersedes 5.72
company I H C
engine D 358

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Instructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	5,8-6,8	mm		
1.2 Supply pump pressure	800	5,0-5,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	64,5-65,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	9,5-15,5	cm³/1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	330-470(300-500)	800	1000-1150
	mm	Start	(5,5-7,1)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	800	1200
	kp/cm²	1,5-2,0(1,3-2,2)	(4,8-5,7)	6,4-6,9(6,2-7,1)
Overflow delivery	rev/min		1000	
	cm³/10 s		mind. 27	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1360-1410	0		
		(1340-1430)			
		1300		(30,0-40,0)	
		1200	68,0-71,0	(67,0-72,0)	
		800		(64,0-66,0)	
		500	58,5-61,5	(57,5-62,5)	
	Stop	1200	0		
Idle stop	Full	400-460	0		
		(380-480)			
		350		(8,5-16,5)	
	Start	100	mind. 90,0		
		500	max. 47,5		
End stop		mind. 180			

C13

C13

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump = 2,0 mm Dimension IV Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,9 f
3. Edition
En

Testoil-ISO 4113

VA 4/100 H 1250 CR 90 Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)
0 460 304 219

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,04

supersedes 3.76
company IHC
engine DT 239

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,7-5,7	mm		
1.2 Supply pump pressure	800	5,0-5,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	79,0-80,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	43,5-51,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start	400	800	1000	1080-1180
	mm	210-340(180-370)	(4,4-6,0)	6,2-7,2	(5,9-7,5)	6,9-7,6(6,6-7,9)
		0,7-1,7(0,4-2,0)				
2.2 Supply pump	rev/min	200		800		1250
	kp/cm²	1,8-2,3(1,6-2,5)		(4,8-5,7)		6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500				1250
	cm³/10 s	55-100(40-110)				55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1360-1410	0		
		(1340-1430)			
		1300		(42,5-52,5)	
		1240-1260	Start		
		1200	75,5-78,5	(74,5-79,5)	
		800		(78,5-80,5)	
		500	78,0-81,0	(77,0-82,0)	
	Stop	1250	0		
Idle stop	Full	490-540	0		
		(470-560)			
		400		(16,0-24,0)	
		100	mind. 90,0		
End stop	Start	220-320			

C15

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

C15

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,0 mm Dimension V = 24,5 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 b 1

2. Edition

En

Testoil-ISO 4113

VA 6/100 H 1100 CR 36 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes 11.73
company IHC
engine XDD 358

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting $0{,}3_{mm} \pm 0{,}04$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	3,6-4,6	mm		
1.2 Supply pump pressure	700	5,7-6,2	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	66,5-67,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1160	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start				
	mm	130-230(100-260	300	700	850	980-1100
		1,0-2,0(0,7-2,3)	(3,3-4,9)	4,3-5,3(4,0-5,6)		5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200		700		1100
	kp/cm²	3,2-3,7(3,0-3,9)		(5,5-6,4)		7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500				1100
	cm³/10 s	55-100(40-110)				55-100(40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1180-1230	0		
		(1160-1250)			
		1160		(30,0-40,0)	
		1120-1140	Start		
		1100	71,5-74,5	(70,5-75,5)	
		800		(66,0-68,0)	
		500	62,0-65,0	(61,0-66,0)	
	Stop	1100	0		
Idle stop	Full	380-450	0		
		(360-470)		(6,0-14,0)	
		300			
		100	mind.90,0		
End stop	Start	220-320			

C17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 3,6 mm Dimension V = 24,6 mm

CAP

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 2,6 c
3. Edition

En

VA 3/11 H 1200 CL 134-9 Nozzle-and-holder assembly
0 460 313 019 1 688 901 020 (172 + 3 bar)

supersedes 4.79
company Fiat
engine 8035-04265

Testoil-ISO 4113

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,7 mm ± 0,02(± 0,04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Instructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,55-4,65	mm		
1.2 Supply pump pressure	800	4,8 -5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	68,0-69,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind. 120,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start				
	mm	330-430(300-460)	600	800	1050	1100-1230
		1,8-2,8(1,5-3,1)	(4,25-4,95)	6,9-7,9(6,6-8,2)		8,9-9,6(8,6-9,9)
2.2 Supply pump	rev/min	200		800		1200
	kp/cm²	1,7-2,1(1,5-2,3)		(4,6-5,5)		6,6-7,1(6,4-7,3)
Overflow delivery	rev/min	500				1200
	cm³/10 s	55-100(40-110)				55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1360-1410	0		
		(1340-1430)			
		1300		(35,0-45,0)	
		1250-1270	Start		
		1200	61,0-64,0	(60,0-65,0)	
		800		(67,5-69,5)	
		500	62,5-66,5	(61,5-67,5)	
	Stop	1200	0		
Idle stop	Full	340-400	0		
		(320-380)			
		300		(16,0-24,0)	
		100	mind. 120,0		
End stop	Start	110-230			

C19

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 3,80 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 FIA 2,6 a 1
1. Edition

En

Testoil-ISO 4113

VA 3/110 H 1250 CL 134-6 . Nozzle-and-holder assembly
0 460 313 016 1 688 901 020 (172 + 3 bar)

supersedes
company Fiat
engine 8035-02201

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,7 mm ± 0,02 (± 0,04)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,55-4,65	mm		
1.2 Supply pump pressure	800	4,8 -5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	66,5-67,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start (autom.)	100	mind.120,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1350	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start	600	800	1050	1100-1230
	mm	330-430(300-460)				
		1,8-2,8(1,5-3,1)	(4,25-4,95)	6,9-7,9(6,6-8,2)		8,9-9,6(8,6-9,9)
2.2 Supply pump	rev/min	200		800		1250
	kp/cm²	1,7-2,1(1,5-2,3)		(4,6-5,5)		6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500				1250
	cm³/10 s	55-100(40-110)				55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1420-1470	0		
		(1400-1490)			
		1350		(35,0-45,0)	
		1300-1320	Start		
		1230	61,0-64,0	(60,0-65,0)	
		800		(66,0-68,0)	
		500	61,0-65,0	(60,0-66,0)	
	Stop	1250	0		
Idle stop	Full	340-400	0		
		(320-420)			
		300		(16,0-24,0)	
	Start	100	mind. 120,0		
End stop		110-230			

C21

C21

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 3,80 mm Dimension V = 26,40 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 2,6 a
2. Edition

En

Testoil-ISO 4113

VA 3/110 H 1200 CL 134-5 Nozzle-and-holder assembly
0 460 313 015 1 688 901 020 (172 + 3 bar)

supersedes 7.73
company Fiat
engine 8035

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,7 mm ± 0,02(± 0,04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,1-5,1	mm		
1.2 Supply pump pressure	800	4,8-5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	66,5-67,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind. 120,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start	600	800	1050	1100-1230
	mm	1,8-2,8(1,5-3,1)	(3,8-5,4)	6,9-7,9(6,6-8,2)		8,9-9,6(8,6-9,9)
2.2 Supply pump	rev/min	200		800		1200
	kp/cm²	1,7-2,1(1,5-2,3)		(4,6-5,5)		6,6-7,1(6,4-7,3)
Overflow delivery	rev/min	500				1200
	cm³/10 s	55-100(40-110)				55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1360-1410	0		
		(1340-1430)			
		1300		(35,0-45,0)	
		1250-1270	Start		
		1180	60,5-63,5	(59,5-64,5)	
		800		(66,0-68,0)	
		500	61,0-65,0	(60,0-66,0)	
	Stop	1200	0		
Idle stop	Full	340-400	0		
		(320-420)			
		300		(16,0-24,0)	
		100	mind. 65,0		
End stop	Start	110-230			

C23

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 3,80 mm Dimension V = 26,40 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 3,5 c
2. Edition
En

Testoil-ISO 4113

VA 4/110 M 1250 CL 136-8 · Nozzle-and-holder assembly
0 460 314 038 1 688 901 020 (172 + 3 bar)

supersedes
company 10.77
Fiat
engine 8045-02270

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02(± 0,04)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	4,7-5,5	mm		
1.2 Supply pump pressure	1000	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1250	65,5-68,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	22,0-28,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.110,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1400	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	420-570(390-600)	700	1000	1100-1250
	mm	Start	1,5-2,5(1,2-2,8)	(4,3-5,8)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		1000	1250
	kp/cm²	1,5-2,0(1,3-1,8)		(5,1-6,0)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500			1250
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1450-1500	0		
		(1430-1520)			
		1400		(25,0-35,0)	
		1300-1330	Start		
		1250		(64,5-69,5)	
		800	67,5-68,5	(66,5-69,5)	
		500	59,0-62,0	(58,0-63,0)	
	Stop	1250	0		
Idle stop	Full	400-450	0		
		(380-470)			
		300		(21,0-29,0)	
	Start	100	mind.110,0		
End stop		110-230			

D1

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

D1

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 35 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 3,60 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 3,5 a
2. Edition
En

Testoil-ISO 4113

VA 4/110 H 1200 CL 136-4
0 460 314 023

supersedes 7.73
company Fiat
engine 8045

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Instructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	3,5-4,5	mm		
1.2 Supply pump pressure	800	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	68,0-69,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start (autom.)	100	mind. 130,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1270	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	220-370(190-340)	500	800	1100-1230
	mm	Start	1,5-2,5(1,2-2,8)	(3,2-4,8)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		800	1200
	kp/cm²	1,8-2,3(1,6-2,5)		(5,1-6,0)	6,9-7,4(6,7-7,6)
Overflow delivery	rev/min	500			1200
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1330-1380	0		
		(1310-1400)			
		1270		(35,0-45,0)	
		1220-1240	Start		
		1180	65,0-68,0	(64,0-69,0)	
		800		(67,0-70,0)	
		500	65,0-68,0	(64,0-69,0)	
	Stop	1200	0		
Idle stop	Full	340-400	0		
		(320-420)			
		300		(16,0-24,0)	
	Start	100	mind. 130,0+		
End stop		110-230			

D3

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 3,0 mm Dimension V = 24,6 MM

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,1 i
2. Edition

En

VA 6/100 H 1050 BR 21-3 Nozzle-and-holder assembly
0 460 306 136 1 688 901 020 (172 + 3 bar)

supersedes 4.73
company IHC
engine D 310

Testoil-ISO 4113

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02(±0,04)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	900	5,8-6,8	mm		
1.2 Supply pump pressure	900	6,0-6,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	57,5-58,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	500	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1150	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	480-620 (450-650)	900	950-1050
	mm	Start	(5,5-7,1)	6,7-7,4(6,4-7,7)
2.2 Supply pump	rev/min	100	900	1150
	kp/cm²	2,1-2,6(1,9-2,8)	(5,8-6,7)	6,6-7,1(6,4-7,3)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 27	27-55(13-70)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1200-1250	0		
		1150		(25,0-35,0)	
		1000	61,0-63,0	(60,0-64,0)	
		800		(57,0-59,0)	
		500	55,0-58,0	(54,0-59,0)	
	Stop	1050	0		
Idle stop	Full	580-650 (560-630)	0		
		500		(16 - 24)	
	Start	100	mind. 90,0		
		500	mind. 32,5		
End stop		mind. 180			

D5

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 35 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,0 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5c 1

2. Edition

En

Testoil-ISO 4113

VA 4/100 H 1050 CR 12-8 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes 4.73
company IHC
engine D 206

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	600	2,6-3,6	mm		
1.2 Supply pump pressure	600	4,1-4,6	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	62,5-63,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start 96 bar	100	mind.100,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1100	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-330(170-360)	400	600	850-1000
	mm	Start	1,3-2,3(1,0-2,6)	(2,3-3,9)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200		600	1050
	kp/cm²	1,7-2,2(1,5-2,0)		(3,9-4,8)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500			1050
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1150-1200	0		
		(1130-1220)			
		1100		(30,0-40,0)	
		1050-1070	Start		
		1020	63,5-66,5	(62,5-67,5)	
		800		(62,0-64,0)	
		500	57,5-60,5	(56,5-61,5)	
	Stop	1050	0		
Idle stop	Full	400-450	0		
		(380-470)			
		350		(11,0-19,0)	
	Start	100	mind.100,0		
End stop		220-300			

D7

07

BOSCH

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,4 mm Dimension V = 24,6 mm

D8

En

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9a 2
3. Edition

En

VA 4/100 H 1100 CR 12-3 Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 3.76
company IHC
engine D 239

Testoil-ISO 4113

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	3,2-4,0	mm		
1.2 Supply pump pressure	800	4,8-5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	68,5-69,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.85,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1150	33,5-41,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	280-430(250-460)	500	800	1000-1100
	mm	Start	0,8-1,8(0,5-2,1)	(2,9-4,3)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		800	1100
	kp/cm²	1,8-2,3(1,6-2,5)		(4,6-5,5)6,0-6,5(5,8-6,7)	
Overflow delivery	rev/min	500			1100
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1180-1250	0		
		(1160-1270)			
		1150		(32,5-42,5)	
		1100-1120	Start		
		1050	72,0-75,0	(71,0-76,0)	
		800		(68,0-70,0)	
		500	65,0-68,0	(64,0-69,0)	
	Stop	1100	0		
Idle stop	Full	430-500	0		
		(410-520)			
		400		(11,0-19,0)	
	Start	100	mind.85,0		
End stop		220-300			

D9

D9

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 1,7 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9b 1

2. Edition

En

VA 4/100 H 1200 CR 12-1 Nozzle-and-holder assembly
CR 12-9 1 688 901 020 (172 + 3 bar)

supersedes 11.73
company IHC
engine D 239

Testoil-ISO 4113

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5mm ± 0,04

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	3,2-4,2	mm		
1.2 Supply pump pressure	800	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1250	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	500	800	1000-1150
	mm	Start	1,3-2,3(1,0-2,6)	(2,9-4,5)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		800	1200
	kp/cm²	2,2-2,7(2,0-2,9)		(5,1-6,0)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500			1200
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1270-1320 (1250-1340)	0		
		1250		(25,0-35,0)	
		1200-1220	Start		
		1180	71,0-74,0	(70,0-75,0)	
		800		(69,0-71,0)	
		500	65,0-68,0)	(64,0-69,0)	
	Stop	1200	0		
Idle stop	Full	430-500 (410-520)	0		
		350		(16,0-24,0)	
	Start	100	mind. 90,0		
End stop		220-300			

D11

BOSCH

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,0 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,4 e
2. Edition
En

Testoil-ISO 4113

VA 3/100 H 1100 CR 9-5

supersedes
company 8.77
engine IHC D 155/503

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02(± 0,04)
Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	3,6-4,6	mm		
1.2 Supply pump pressure	700	4,4-4,9	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	61,0-62,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1150	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	160-300(130-330)	400	700	800-950
	mm	Start	1,6-2,6(1,3-2,9)	(3,3-4,9)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		700	1100
	kp/cm²	1,7-2,3(1,5-2,5)		(4,2-5,1)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min	500			1100
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1180-1230	0		
		(1160-1250)			
		1150		(35,0-45,0)	
		1050	60,5-63,5	(59,5-64,5)	
		800		(60,5-62,5)	
		500	51,5-54,5	(50,5-55,5)	
	Stop	1100	0		
Idle stop	Full	450-530	0		
		(430-550)			
		350		(11,0-19,0)	
	Start	100	mind.80,0		
End stop		220-320			

D13

Angle tc the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 6,50 mm Dimension V = 25,00 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,4c 2
3. Edition
En

VA 3/100 H 1100 CR 9-3
CR 9-4

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 3.76
company IHC
engine D 155 X 36
D 155-E 453

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

Pre-stroke setting 0,3 mm ± 0,04
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	3,2-4,0	mm		
1.2 Supply pump pressure	700	4,3-4,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	63,0-64,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1150	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	400	700	900-1050
	mm	Start	0,9-1,9(0,6-2,2)	(2,9-4,3)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		700	1100
	kp/cm²	1,8-2,3(1,6-2,5)		(4,1-5,0)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500			1100
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1200-1250	0		
		(1180-1270)			
		1150		(30,0-40,0)	
		1100-1130	Start		
		1080	65,5-68,5	(64,5-69,5)	
		800		(62,5-64,5)	
		500	55,0-58,0	(54,0-59,0)	
	Stop	1100	0		
Idle stop	Full	430-500	0		
		(410-520)			
		300		(16,0-24,0)	
	Start	100	mind.90,0		
End stop		220-300			

D15

DAF

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 6,5 mm Dimension V = 25,0 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8 f
5. Edition
En

Testoil-ISO 4113

VA 6/100 H 1250 CR 82
0 460 306 164

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 5.77
company IHC
engine D 358

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,04

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	3,1-4,1	mm		
1.2 Supply pump pressure	800	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	73,0-74,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1330	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	250-400(220-430)	450	800	1100-1250
	mm	Start	0,8-1,8(0,5-2,1)	(2,8-4,4)	5,1-5,8(4,8-6,1)
	rev/min	200		800	1250
2.2 Supply pump	kp/cm²	2,0-2,5(1,8-2,7)		(5,1-6,0)	6,9-7,4(6,7-7,6)
	rev/min	500			1250
Overflow delivery	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1380-1450	0		
		(1360-1470)			
		1330		(30,0-40,0)	
		1260-1280	Start		
		1220	76,5-79,5	(75,5-80,5)	
		800		(72,5-74,5)	
		500	67,5-70,5	(66,5-71,5)	
	Stop	1250	0		
Idle stop	Full	480-550	0		
		(460-570)			
		350		(11,0-19,0)	
		100	mind. 90,0		
End stop	Start	220-300			

D17

BOSCH Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 55 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,6 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 4,4 b
3. Edition
En

Testoil-ISO 4113

VA 4/110 H 1250 CR 93 Nozzle-and-holder assembly
0 460 314 029 1 688 901 020 (172 + 3 bar)

supersedes 4.79
company IHC
engine D 268

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02(± 0,04)

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	6,0-7,0	mm		
1.2 Supply pump pressure	1000	5,5-6,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	73,5-74,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.100,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1350	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	330-430(300-460)	500	1000	1030-1180
	mm	Start	0,8-1,8(0,5-2,1)	(5,7-7,3)	7,0-7,7(6,7-8,0)
2.2 Supply pump	rev/min	200		1000	1250
	kp/cm²	1,5-2,0(1,3-2,2)		(5,3-6,2)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min		500		1250
	cm³/10 s		55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1410-1460	0		
		(1390-1480)			
		1350		(25,0-35,0)	
		1260-1280	Start		
		1200	69,0-72,0	(68,0-73,0)	
		800		(73,0-75,0)	
		500	75,5-78,5	(74,5-79,5)	
	Stop	1250	0		
Idle stop	Full	450-500	0		
		(430-520)			
		350		(16,0-24,0)	
	Start	100	mind.100,0		
End stop		220-320			

D19

D19

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,60 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8 v
1. Edition

En

VA 4/100 H 1250 CR 410
0 460 304 247

supersedes
company IHC
engine D 239

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	5,9-6,7	mm		
1.2 Supply pump pressure	1000	5,7-6,2	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	79,0-80,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	43,5-51,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	600	1000	1250
	mm	Start	1,4-2,4(1,1-2,7)	(5,6-7,0)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200		1000	1250
	kp/cm²	1,7-2,2(1,5-2,4)		(5,5-6,4)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500			1250
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1340-1390	0		
		(1320-1410)			
		1300		(42,5-52,5)	
		1200	75,5-78,5	(74,5-79,5)	
		900		(78,5-80,5)	
		...)	78,0-81,0	(77.0-82,0)	
	Stop	1250	0		
Idle stop	Full	480-530	0		
		(460-550)			
		400		(16,0-24,0)	
	Start	100	mind.90,0		
End stop		260-360			

D21

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D21

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = - mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 5,8 q 5
1. Edition
En

VA 3/10 H 1200 CR 409
CR 409 P

supersedes
company IHC
engine D 159/53 HP

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

Pre-stroke setting 0,3 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	4,8-5,8	mm		
1.2 Supply pump pressure	1000	5,6-6,1	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	70,0-71,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	375	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	600	1000	1200
	mm	Start	1,0-2,0(0,7-2,3)	(4,5-6,1)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200		1000	1200
	kp/cm²	1,7-2,2(1,5-2,4)		(5,4-6,3)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500			1200
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1340-1400	0		
		(1320-1420)			
		1300		(25,0-35,0)	
		1180	72,0-75,0	(71,0-76,0)	
		800		(69,5-71,5)	
		500	64,5-67,5	(63,5-68,5)	
	Stop	1200	0		
Idle stop	Full	420-470	0		
		(400-490)			
		375		(11,0-19,0)	
	Start	100	mind.90,0		
End stop		260-360			

D23

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = - mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 a 1

En

5. Edition

VA 4/100 H 1100 CR 12-2

supersedes 6.78
company IHC
engine D 239

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	700	2,9-3,9	mm		
1 2 Supply pump pressure	700	2,6-3,1	kp/cm²		
1 3 Full-load delivery without charge-air pressure	800	62,5-63,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1 5 Start 196 bar	100	mind.100,0	cm³/1000 strokes		
1 6 Full-load speed regulation	1150	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	180-320(150-350)	400	700	910-1020
	mm	Start	0,9-1,9(0,6-2,2)	(2,6-4,2)	4,7-5,4(4,4-5,7)
2 2 Supply pump	rev/min	200		700	1100
	kp/cm²	1,9-2,4(1,7-2,6)		(2,4-3,3)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500			1100
	cm³/10 s	55-100(40-110)			55-100(40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1200-1250	0		
		(1180-1270)			
		1150		(30,0-40,0)	
		1100-1130	Start		
		1080	61,5-64,5	(60,5-65,5)	
		800		(62,0-63,0)	
		500	56,0-59,0	(55,0-60,0)	
	Stop	1100	0		
Idle stop	Full	400-460	0		
		(380-480)			
		350		(11,0-19,0)	
	Start	100	mind.100,0		
End stop		220-300			

E1

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,00 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,5 a 1

1. Edition

En

Testoil-ISO 4113

VA 4/100 H 1050 BR 8

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 4.69
company IHC
engine D 206

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	600	7,5-8,5	mm		
1.2 Supply pump pressure	600	4,7-5,2	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	64,0-65,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.85,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1130	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-370(170-400)	600	840-1000
	mm	Start	(7,2-8,8)	13,7-14,4 (13,4-14,7)
2.2 Supply pump	rev/min	100	600	1050
	kp/cm²	1,6-2,1 (1,4-2,3)	(4,5-5,4)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500	1000	1050
	cm³/10 s	mind.27	55-125(40-135)	55-125(40-125)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1150-1200 (1130-1220)	0		
		1130		(25,0-35,0)	
		1030	67,0-70,0	(66,0-71,0)	
		800		(63,5-65,5)	
		500	57,0-60,0	(56,0-61,0)	
	Stop	1050	0		
Idle stop	Full	390-440 (370-460)	0		
		350		(16,0-24,0)	
	Start	100	mind.85,0		
End stop		500	35,0-52,0	(34,0-53,0)	

E3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

53

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 35 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,5 mm Dimension V = - mm Dimension I = Dimension II = According to the wear-parts list Dimension III = - mm Dimension IV = 2,5 mm (s.a.BMP)

E4

n

f 4.

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 2,3 a
3. Edition
En

Testoil-ISO 4113

VA 3/110 H 1200 BL 134
0 460 313 005

supersedes 7.71
company Fiat
engine 853

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	5,8-6,8	mm		
1.2 Supply pump pressure	700	4,2-4,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	59,0-60,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.130,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	170-320 (140-350)	700	900-1040
	mm	Start	(5,5-7,1)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	700	1200
	kp/cm²	0,8-1,3(0,6-1,5)	(4,0-4,9)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500		1200
	cm³/10 s	mind.25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1330-1380	0		
		(1310-1400)			
		1300		(25,0-35,0)	
		1180	56,5-59,5	(55,5-60,5)	
		800		(58,5-60,5)	
		500	52,0-56,0	(51,0-57,0)	
	Stop	1200	0		
Idle stop	Full	330-400	0		
		(310-420)			
		300		(16,0-24,0)	
	Start	100	mind.130,0		
End stop		130-230			

E5

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 44 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 1,0 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 9,0 mm Dimension III = 35,3 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 2,0 a
3. Edition
En

Testoil-ISO 4113

VA 2/100 H 1100 BR 142
0 460 302 002

supersedes 12.71
company Steyr
engine WD 210

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm
Plunger lift of 1,0 mm related to outlet "B"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	3,8-4,8	mm		
1.2 Supply pump pressure	700	4,2-4,9	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	59,5-60,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	13,0-19,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1180	19,0-27,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	420-530(390-560)	700	960-1060
	mm	Start	(3,5-5,1)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	700	1000
	kp/cm²	1,0-1,5(0,8-1,7)	(4,0-5,1)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500		1000
	cm³/10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1220-1280	0		
		(1200-1300)			
		1180		(18 - 28)	
		1050	57,5-60,5	(56,5-61,5)	
		900		(59,0-61,0)	
		500	54,0-57,0	(53,0-58,0)	
	Stop	1100	0		
Idle stop	Full	300-360	0		
		(280-380)			
		250		(12,0-20,0)	
	Start	100	mind. 80,0		
End stop		110-210			

E7

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 35 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,0 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 2,3 a 3
1. Edition
En

Testoil-ISO 4113

VA 3/110 H 1100 BL 134-1
0 460 313 006

supersedes

company Fiat
engine 853.10

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	5,3-6,3	mm		
1.2 Supply pump pressure	700	4,3-4,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	55,5-56,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.130,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1180	42,0-48,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	220-370(190-400)	700	940-1090
	mm	Start	(5,0-6,6)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	700	1100
	kp/cm²	1,0-1,5(0,8-1,7)	(4,1-5,0)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500		1100
	cm³/10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1230-1260 (1210-1280)	0		
		1180	42,0-48,0	(41,0-49,0)	
		1100	53,5-56,5	(52,5-57,5)	
		800		(55,0-57,0)	
		500	50,0-53,0	(49,0-54,0)	
	Stop	1100	0		
Idle stop	Full	330-400 (310-420)	0		
		300		(16,0-24,0)	
	Start	100	mind.130,0		
End stop		130-230			

E9

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,0 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 9,0 mm Dimension III = 35,3 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 2,3 a 2
2. Edition
En

VA 3/110 H 1300 BL 134-2
0 460 313 007

supersedes 7.77
company Fiat
engine 853

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

Pre-stroke setting 0,7 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	6,3-7,3	mm		
1.2 Supply pump pressure	800	4,4-4,9	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	60,5-61,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.110,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1400	37,0-43,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	360-500(330-530)	800	1100-1250
	mm	Start	(6,0-7,6)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1300
	kp/cm²	0,6-1,1(0,4-1,3)	(4,2-5,1)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind.25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1450-1510	0		
		(1430-1530)			
		1400		(36,0-44,0)	
		1250	56,0-59,0	(55,0-60,0)	
		800		(60,0-62,0)	
		500	51,5-54,5	(50,5-55,5)	
	Stop	1300	0		
Idle stop	Full	380-430	0		
		(360-450)			
		300		(16,0-24,0)	
End stop	Start	100	mind.110,0		
		110-230			

E11

EAA

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,5 mm (s.a.BMP 161/32) Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 2,3 b
2. Edition
En

Testoil-ISO 4113

VA 3/110 H 1100 BL 134-3
0 460 313 011

supersedes 5.72
company Fiat
engine 853-10

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,7 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	6,3-7,3	mm		
1.2 Supply pump pressure	800	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	58,0-59,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.130,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1100	28,5-36,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	370-520(340-550)	800	950-1100
	mm	Start	(6,0-7,6)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	800	1100
	kp/cm²	0,7-1,2(0,5-1,4)	(4,3-5,2)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1280-1330	0		
		(1260-1360)			
		1100		(27,5-37,5)	
		1080	56,5-59,5	(55,5-60,5)	
		800		(57,5-59,5)	
		500	51,5-54,5	(50,5-55,5)	
	Stop	1100	0		
Idle stop	Full	370-420	0		
		(350-440)			
		300		(16,0-24,0)	
	Start	100	mind.130,0		
End stop		110-250			

E13

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 2,3 b 2
1. Edition
En

Testoil-ISO 4113

VA 3/110 H 1200 BL 134-4
0 460 313 012

supersedes

company Fiat

engine 853

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,7 mm

Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	7,3-8,3	mm		
1.2 Supply pump pressure	800	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	62,0-63,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.130,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	310-460(280-490)	800	1050-1200
	mm	Start	(7,0-8,6)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1200
	kp/cm²	0,9-1,4(0,7-1,6)	(4,3-5,2)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min		1000	
	cm³/10 s		55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1400 (1330-1420)	0		
		1300		(30,0-40,0)	
		1200	60,0-63,0	(59,0-64,0)	
		800		(61,5-63,5)	
		500	54,0-57,0	(53,0-58,0)	
	Stop	1200	0		
Idle stop	Full	370-420 (350-440)	0		
		300		(16,0-24,0)	
	Start	100	mind.130,0		
End stop		110-230			

E15

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 2,3 a 4

1. Edition En

VA 4/110 H 1200 BL 136
0 460 314 006

supersedes

company Fiat
engine 854

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	6,8-7,8	mm		
1.2 Supply pump pressure	800	5,0-5,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	59,5-60,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	340	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.130,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1280	27,0-35,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450(270-480)	800	1000-1160
	mm	Start	(6,5-8,1)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	800	1200
	kp/cm²	1,0-1,5(0,8-1,7)	(4,8-5,7)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		1200
	cm³/10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1330-1370	0		
		(1310-1390)			
		1280		(26,0-36,0)	
		1180	55,0-58,0	(54,0-59,0)	
		800		(59,0-61,0)	
		500	58,0-61,0	(57,0-62,0)	
	Stop	1200	0		
Idle stop	Full	380-430	0		
		(360-450)			
		340		(16,0-24,0)	
	Start	100	mind.130,0		
End stop		130-230			

E17

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 33 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 1,5 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 12,0 mm Dimension III = 33,3 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,1 x
2. Edition
En

VA 6/100 H 1350 BR 49-1

supersedes 10.69
company IHC
engine D 310/36

Testoil-ISO 4113

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting. 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	6,8-7,8	mm		
1.2 Supply pump pressure	700	5,1-5,6	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1000	68,5-69,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	17 - 23	cm³/1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.80	cm³/1000 strokes		
1.6 Full-load speed regulation	1430	46 - 54	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450 (270-480)	700	1080-1230
	mm	Start	(6,5-8,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	700	1350
	kp/cm²	1,5-2,0(1,3-2,2)	(4,9-5,8)	7,4-7,9(7,2-8,1)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-100(40-110)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1500-1550 (1480-1570)	0		
		1430		(45 - 55)	
		1330	63 - 66	(62 - 67)	
		1000		(68 - 70)	
		500	56 - 59	(55 - 60)	
	Stop	1350	0		
Idle stop	Full	480-540 (460-560)	0		
		350		(16 - 24)	
	Start	100	mind. 80,0		
End stop		mind.200			

E19

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 ± 8° δ = 60 ± 8°	Pump Dimension IV = 3,0 mm (s.a. BMP 161/32) Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,5 a 2
2. Edition En

VA 4/100 H 1050 CR 8

supersedes 15.9.71
company IHC
engine D 206

Testoil-ISO 4113

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02(±0,04)
Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	3,2-4,0	mm		
1.2 Supply pump pressure	800	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	64,5-65,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1130	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	800	900-1050
	mm	Start	(2,9-4,3)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	100	800	1050
	kp/cm²	0,7-1,2(0,5-1,4)	(5,1-6,0)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500		1050
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1170-1220	0		
		(1150-1240)			
		1130		(25,0-35,0)	
		1030	68,0-71,0	(67,0-72,0)	
		800		(64,0-66,0)	
		500	59,5-62,5)	(58,5-63,5)	
	Stop				
Idle stop	Full	440-490	0		
		(420-510)			
		350		(16,0-24,0)	
	Start	100	mind.85,0		
End stop		220-300			

E21

EJA

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 35 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = - mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 w

6. Edition

En

VA 4/100 H 1150 CR 69-4
0 460 304 229

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 2.80
company IHC
engine D 239

Setting in accordance with WPP 161/4 1 st. Supplement plunger lift 1.0 mm referenced to outlet "A".

Pre-stroke setting 0 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	900	3,6-4,6	mm		
1.2 Supply pump pressure	900	5,1-5,6	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	66,0-67,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1175	46,0-54,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	330-480(300-510)	600	900	980-1130
	mm	Start	1,1-2,1(0,8-2,4)	(3,3-4,9)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		900	1150
	kp/cm²	1,4-1,9(1,2-2,1)		(4,9-5,8)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500			1150
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1235-1285	0		
		(1215-1305)			
		1175		(45,0-55,0)	
		1130	69,0-72,0	(68,0-73,0)	
		800		(65,5-67,5)	
		500	63,0-66,0	(62,0-67,0)	
	Stop	1150	0		
Idle stop	Full	430-480	0		
		(410-500)			
		350		(11,0-19,0)	
	Start	100	mind. 90,0		
End stop		220-320			

E23

BOSCH

Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,2 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 GUL 2,3 a 8
3. Edition
En

VA 3/100 H 1150 BR 105 Nozzle-and-holder assembly
0 460 303 041 1 688 901 020 (172 + 3 bar)

supersedes 8.69
company Güldner
engine 3 L 79

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".
Pre-stroke setting 0,1 mm ± 0,02 (±0,04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	5,5-6,5	mm		
1.2 Supply pump pressure	700	4,2-4,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	57,0-58,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	11,0-17,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.100,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1220	16,0-24,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	330-490(300-520)	700	1000-1130
	mm	Start	(5,2-6,8)	10,7-11,5(10,4-11,8)
2.2 Supply pump	rev/min	100	700	1150
	kp/cm²	0,9-1,4(0,7-1,6)	(4,0-4,9)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind.25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1230-1290 (1210-1310)	0		
		1220		(15,0-25,0)	
		1130	60,0-63,0	(59,0-64,0)	
		800		(56,5-58,5)	
		500	47,5-50,5	(46,5-51,5)	
	Stop	1150	0		
Idle stop	Full	290-340 (270-360)	0		
		250		(10,0-18,0)	
	Start	100	mind. 100		
End stop		130-230			

F1

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 55 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 1,0 mm (s.a.BMP 161/32) Dimension V = - mm Dimension I = 7,0 mm Dimension II = 11,0 mm Dimension III = 32,8 mm

F2

F2

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,5 c 6
1. Edition
En

Testoil-ISO 4113

VA 4/100 H 1250 CR 68
CR 68 P
0 460 304 195
0 460 304 196

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes
company IHC
engine D 206

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,2-5,2	mm		
1.2 Supply pump pressure	800	5,1-5,6	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	60,5-61,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (196 bar)	100	min. 90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	21,0-29,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start 180-300 400 800 1100 1150-1250 Ende
	mm	1,1-2,1(0,8-2,4) (3,9-5,5) 6,1-7,1(5,8-7,4) (7,0-7,7)
2.2 Supply pump	rev/min	200 800 1250
	kp/cm²	2,1-2,6(1,9-2,8) (4,9-5,8) 6,8-7,3(6,6-7,5)
Overflow delivery	rev/min	1250
	cm³/10 s	55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1400	0		
		1300		(20,0-30,0)	
		1100	50,0-63,0	(59,0-64,0)	
		800		(60,0-62,0)	
		600	53,0-56,0	(52,0-57,0)	
	Stop	1250	0		
Idle stop	Full	390-440	0		
		350		(11,0-19,0)	
	Start	100	min.90,0		
End stop		220-300			

F3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

FR

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 3,0 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,9 c 1
2. Edition
En

Testoil-ISO 4113

VA 4/100 H 1250 CR 67-1
CR 67-1 P

0 460 304 193
0 460 304 194

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 11.73
company IHC
engine D 239 TD 8 c

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)
Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,5-5,5	mm		
1.2 Supply pump pressure	800	5,2-5,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	min. 90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1330	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start 200-300 400 800 1000 1100-1250
	mm	1,1-2,1(0,8-2,4) (4,2-5,8)6,1-7,1(5,8-7,4) (6,9-7,6) Ende
2.2 Supply pump	rev/min	200 800 1250
	kp/cm²	2,1-2,6(1,9-2,8) (5,0-5,9) 7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	1250
	cm³/10 s	55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1370-1420	0		
		1330		(30,0-40,0)	
		1250	66,0-69,0	(65,0-70,0)	
		800		(69,0-71.0)	
		500	71,0-74,0	(70,0-75,0)	
	Stop	1250	0		
Idle stop	Full	400-450	0		
		350		(11,0-19,0)	
	Start	100	min.90,0		
End stop		220-300			

F5

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 1,8 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,5 k
2. Edition

En

VA 4/100 H 1200 CR 12-14 . Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 3,76
company IHC
engine D 239

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".
Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	3,2-4,2	mm		
1.2 Supply pump pressure	800	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	67,5-68,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1280	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	500	800	1000-1150
	mm	Start	1,3-2,3(1,0-2,6)	(2,9-4,5)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		800	1200
	kp/cm²	2,2-2,7(2,0-2,9)		(5,1-6,0)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500			1200
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1320-1370	0		
		(1300-1390)			
		1280		(30,0-40,0)	
		1230-1250	Start		
		1180	67,5-70,5	(66,5-71,5)	
		800		(67,0-69,0)	
		500	62,0-65,0	(61,0-66,0)	
	Stop	1200	0		
Idle stop	Full	410-470	0		
		(390-490)			
		350		(11,0-19,0)	
	Start	100	mind.90,0		
End stop		220-300			

F7

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,2 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 4,0 a 2
1. Edition

En

VA 4/1000 H 1200 BR 145-1
0 460 304 103

supersedes
company Steyr
engine WD 440

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting ,3 mm
Plunger li: 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,8-5,8	mm		
1.2 Supply pump pressure	800	4,6-5,1	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	66,0-67,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	16,0-22,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1280	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-550(370-580)	800	1050-1180
	mm	Start	(4,5-6,1)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	800	1200
	kp/cm²	1,1-1,6(0,9-1,8)	(4,4-5,3)	5,9-6,4(5,7-6,6)
Overflow delivery	rev/min	500		1000
	cm³/10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1410 (1330-1430)	0		
		1280		(35,0-45,0)	
		1150	67,5-70,5	(66,5-71,5)	
		800		(65,5-67,5)	
		500	64,0-67,0	(63,0-68,0)	
	Stop	1200	0		
Idle stop	Full	320-380 (300-400)	0		
		250		(15,0-23,0)	
	Start	100	mind. 80,0		
End stop		110-210			

F9

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 3,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 1
2. Edition

En

Testoil-ISO 4113

VA 4/100 H 1150 CR 69-5
0 460 304 238
(see VDT-WPP 161/4, Suppl. 1)

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 1.78
company IHC
engine D 239

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	900	3,6-4,6	mm		
1.2 Supply pump pressure	900	5,1-5,6	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	66,0-67,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1175	46,0-54,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	330-480(300-510)	600	900	980-1130
	mm	Start	1,1-2,1(0,8-2,4)	(3,3-4,9)	4,7-5,4(4,4-5,7)
2.2 Supply pump	rev/min	200		900	1150
	kp/cm²	1,4-1,9(1,2-2,1)		(4,9-5,8)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500			1150
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1235-1285 (1215-1305)	0		
		1175		(45,0-55,0)	
		1130	69,0-72,0	(68,0-73,0)	
		800		(65,5-67,5)	
		500	63,0-66,0	(62,0-67,0)	
	Stop	1150	0		
Idle stop	Full	430-480 (410-500)	0		
		350		(11,0-19,0)	
	Start	100	mind. 90,0		
End stop		220-320			

F11

FM

BOSCH Geschäftsbereich KH Kundendienst, Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,2 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 DEE 5,0 a
2. Edition
En

Testoil-ISO 4113

VA 6/110 H 1100 BR 154 Nozzle-and-holder assembly
0 460 316 010 1 688 901 020 (172 + 3 bar)

supersedes 6.70
company John Deere
engine 643

Setting of the pointer at a stroke of 2,1 mm in relation to outlet "F"

Pre-stroke setting 0,4 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings	Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	8,7-9,7 mm		
1.2 Supply pump pressure	800	5,3-5,8 kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	67,0-68,0 cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	-- cm³/1000 strokes		
1.4 Idle speed regulation	350	16,0-22,0 cm³/1000 strokes		3,0
1.5 Start	100	mind.130,0 cm³/1000 strokes		
1.6 Full-load speed regulation	1150	26,0-34,0 cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	230-380(200-410)	800	900-1030
	mm	Start	(8,4-10,0)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	800	1100
	kp/cm²	1,0-1,5(0,8-1,7)	(5,1-6,0)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500		1000
	cm³/10 s	mind. 25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1170-1220 (1150-1240)	0		
		1150		(25,0-35,0)	
		1050	64,5-66,5	(63,5-67,5)	
		800		(66,5-68,5)	
		500	56,0-59,0	(55,0-60,0)	
	Stop	1100	0		
Idle stop	Full	400-450 (380-470)	0		
		350		(15,0-23,0)	
	Start	100	mind.130,0		
End stop		120-240			

F13

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 35 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV= 1,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 DEE 3,6 a
3. Edition
En

VA 4/110 H 1250 BR 147
0 460 314 008

supersedes 7.71
company John Deere
engine 219 D 26 Z

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm

Plunger lift of 1,82 mm related to outlet "D" = OT

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	5,8-6,8	mm		
1.2 Supply pump pressure	800	4,2-4,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	69,5-72,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1290	46,0-54,0	cm³/1000 strokes		

Testoil-ISO 4113

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	330-480(300-510)	800	1090-1220
	mm	Start	(5,5-7,1)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm²	0,8-1,3(0,6-1,5)	(4,0-4,9)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500		1000
	cm³/10 s	mind. 25		55-1250(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1410 (1330-1430)	0		
		1290		(45,0-55,0)	
		1200	72,5-73,5	(72,0-74,0)	
		900		(69,0-73,0)	
		500	53,0-57,0	(52,0-58,0)	
	Stop	1250	0		
Idle stop	Full	500-550 (480-570)	0		
		400		(16,0-24,0)	
	Start	100	mind. 90,0		
End stop		200-300			

F15

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV= 0,5 mm Dimension V= - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 DEE 2,5 g

2. Edition

En

VA 3/100 H 1250 BR 26-3 Nozzle-and-holder assembly
0 460 303 121 1 688 901 020 (172 + 3 bar)

supersedes 3.72
company John Deere
engine 3.164 DL 01

Testoil-ISO 4113

Setting of pointer with plunger lift 1.72 mm referenced to outlet "A" in line with TDC position of corresponding engine cylinder

Pre-stroke setting 0,3mm ± 0,02 (± 0,04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	7,9-8,9	mm		
1.2 Supply pump pressure	800	4,4-4,9	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1150	63,0-64,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	--	--	cm³/1000 strokes		
1.6 Full-load speed regulation	1250	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	150-300(120-330)	800	1000-1150
	mm	Start	(7,6-9,2)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm²	1,1-1,6(0,9-1,8)	(4,2-5,1)	6,4-6,9(6,2-7,1)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-125 (40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1280-1380	0		
		(1260-1400)			
		1250		(25,0-35,0)	
		1150		(62,5-64,5)	
		800	56,5-59,5	(55,5-60,5)	
		500	51,0-54,0	(50,0-55,0)	
		100	mind.38,0		
	Stop	1250	0		
Idle stop	Full	450-500	0		
		(430-520)			
		350		(11,0-19,0)	
--	Start	--	--		
End stop		--	--		

F17

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 DEE 3,3 b
3. Edition
En

Testoil-ISO 4113

VA 4/100 H 1200 BR 30 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes 12.68
company John Deere
engine X 22

Plunger lift 1.72 mm referenced to outlet "D" in line with engine TDC position.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	5,8-6,8	mm		
1.2 Supply pump pressure	700	4,1-4,6	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1100	50,5-51,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0	cm³/1000 strokes		3,0
1.5 Start	--	--	cm³/1000 strokes		
1.6 Full-load speed regulation	1270	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	170-330(140-360)	700	1060-1220
	mm	Start	(5,7-7,1)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	700	1200
	kp/cm²	1,2-1,7(1,0-1,9)	(3,9-4,8)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1310-1360	0		
		(1290-1380)			
		1360	max. 5,0		
		1270		(25,0-35,0)	
		1180	47,5-50,5	(46,5-51,5)	
		1100		(50,0-52,0)	
		100	mind.33,0		
	Stop	1200	0		
Idle stop	Full	490-550	0		
		(470-570)			
		400		(8,0-16,0)	
End stop	Start				

F19

BOSCH

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 33 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = - mm Dimension V = - mm Dimension III= 34,4mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 DEE 3,3 d
3. Edition
En

Testoil-ISO 4113

VA 4/100 H 1250 BR 27 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes 6.70
company John Deere
engine X 22

Setting of pointer with plunger lift 1.72 mm referenced to outlet "D" in line with TDC position of corresponding engine cylinder

Pre-stroke setting 0,3 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	6,5-7,5	mm		
1.2 Supply pump pressure	500	3,2-3,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1150	63,0-64,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0	cm³/1000 strokes		3,0
1.5 Start	--	--	cm³/1000 strokes		
1.6 Full-load speed regulation	1330	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	170-330 (140-360)	800	1090-1240
	mm	Start	(6,2-7,8)	11,7-12,4(11,4-12,7)
2.2 Supply pump	rev/min	100	500	1250
	kp/cm²	1,1-1,6(0,9-1,8)	(3,0-3,9)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500		
	cm³/10 s	mind. 25		

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1370-1580 (1350-1600)	0		
		1430	max. 6,0		
		1330		(30,0-40,0)	
		1230	57,5-62,5	(56,5-63,5)	
		1150		(62,5-64,5)	
		800	57,5-60,5	(56,5-61,5)	
		100	mind. 38,0		
	Stop	1250	0		
Idle stop	Full	550-600 (530-620)	0		
		400		(8,0-16,0)	
--	Start	--	--		
End stop		--			

F21

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 35 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,0 mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 12,0 mm Dimension III = 33,8 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 DEE 2,5 f 1
1. Edition
En

Testoil-ISO 4113

VA 3/100 H 1150 BR 29-1 Nozzle-and-holder assembly
0 460 303 048 1 688 901 020 (172 + 3 bar)

supersedes
company John Deere
engine 49 F

Plunger lift 1.72 mm referenced to outlet "A" in line with engine TDC position.

Pre-stroke setting 0,3 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	6,3-7,3	mm		
1.2 Supply pump pressure	700	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1000	59,5-60,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	9,0-15,0	cm³/1000 strokes		3,0
1.5 Start	--	--	cm³/1000 strokes		
1.6 Full-load speed regulation	1250	27,0-33,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	100-310(70-340)	700	970-1130
	mm	Start	(6,0-7,6)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	700	1150
	kp/cm²	1,5-2,0 (1,3-2,2)	(4,3-5,2)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-125(40 -140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1270-1325	0		
		(1250-1345)			
		1250		(26,0-34,0)	
		1130	54,0-57,5	(53,5-58,5)	
		1000		(59,0-61,0)	
		500	44,0-48,0	(43,0-49,0)	
		100	mind.35,0		
	Stop	1150	0		
Idle stop	Full	520-580	0		
		(500-600)			
		400		(8,0-16,0)	
--	Start	--	-		
End stop		--	-		

F23

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = - mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 12,0 mm Dimension III = 28,3 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,9 h
2. Edition
En

VA 4/100 H 1250 CR 89-1
0 460 304 226

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes
company: IHC
engine: D 239

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,04

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press. kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,5-5,5	mm		
1.2 Supply pump pressure	800	5,2-5,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	67,5-68,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	8,0-14,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1320	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start	400	800	1000 1100-1250
	mm	1,1-2,1(0,8-2,4)	(4,2-5,8)6,1-7,1(5,8-7,4)6,9-7,6(6,6-7,9)		
2.2 Supply pump	rev/min	200		800	1250
	kp/cm²	2,0-2,6(1,9-2,8)		(5,0-5,9)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500			1250
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1380-1430			
		(1360-1450)			
		1320		(30,0-40,0)	
		1260-1280	Start		
		1220	63,5-66,5	(62,5-67,5)	
		800		(67,0-69,0)	
		500	68,5-71,5	(67,5-72,5)	
	Stop	1250	0		
Idle stop	Full	450-500	0		
		(430-520)			
		400		(7,0-15,0)	
	Start	100	mind.90,0		
End stop		220-320			

G1

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angulo en la placa de tope	Cotas para ajuste previo
Bomba α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Bomba Cota IV = 2,6 mm Cota V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,9 h 1
1. Edition
En

VA 4/ 100 H 1250 CR 89 Nozzle-and-holder assembly
0 460 304 218 1 688 901 020 (172 + 3 bar)

supersedes
company IHC
engine D 239

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,5-5,5	mm		
1.2 Supply pump pressure	800	5,2-5,7	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1330	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

		Start				
2.1 Timing device	rev/min	200-330(170-360)	400	800	1000	1100-1250
	mm	1,1-2,1(0,8-2,4)	(4,2-5,8)	6,1-7,1(5,8-7,4)		6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	200		800		1250
	kp/cm²	21,-2,6(1,9-2,8)		(5,0-5,9)		7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500				1250
	cm³/10 s	55-100(40-110)				55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1330-1420	0		
		(1310-1440)			
		1330		(30,0-40,0)	
		1280-1300	Start		
		1250	66,0-69,0	(65,0-70,0)	
		800		(69,0-71,0)	
		500	71,0-74,0	(70,0-75,0)	
	Stop	1250	0		
Idle stop	Full	400-450	0		
		(380-470)			
		350		(11,0-19,0)	
	Start	100	mind.90,0		
End stop		220-320			

G3

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ o = 60 ± 8°	Pump Dimension IV = 1,8 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IIIC 5,8f 1

En 4. Edition

Testoil-ISO 4113

VA 4/110 H 1150 CR 85 Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 12.76
company IHC
engine D 246

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,4 mm ± 0,04

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	3,6-4,6	mm		
1.2 Supply pump pressure	700	4,8-5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	74,5-75,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	370	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.100,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1220	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start				
	mm	200-350(170-380)	400	700	900	880-1050
		1,5-2,5(1,2-2,8)	(3,3-4,9)	4,5-5,5(4,2-5,8)		5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200		700		1150
	kp/cm²	2,3-2,8(2,1-3,0)		(4,6-5,5)		6,4-6,9(6,2-7,1)
Overflow delivery	rev/min	500				1150
	cm³/10 s	55-100(40-110)				55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1250-1300	0		
		(1230-1320)			
		1220		(30,0-40,0)	
		1160-1180	Start		
		1120	75,0-78,0	(74,0-79,0)	
		800		(74,0-76,0)	
		500	65,5-68,5	(64,5-69,5)	
	Stop	1150	0		
Idle stop	Full	420-500			
		(400-520)			
		370		(11,0-19,0)	
	Start	100	mind.100,0		
End stop		220-320			

G5

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 3,00 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,1 h
2. Edition
En

Testoil-ISO 4113

VA 6/100 H 1050 CR 78 Nozzle-and-holder assembly
0 460 306 152 1 688 901 020 (172 + 3 bar)

supersedes 5.12
company IHC
engine D 310

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,04

1. Settings	rev/min	Setti ngs		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	2,1-2,9	mm		
1.2 Supply pump pressure	800	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	60,0-61,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	---	cm³/1000 strokes		
1.4 Idle speed regulation	400	7,0-13,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.85,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1120	11,0-19,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	480-600(450-630)	800	920-1050
	mm	Start	(1,8 - 3,2)	3,4-4,1 (3,1-4,4)
2.2 Supply pump	rev/min	200	800	1050
	kp/cm²	1,3-1,8(1,1-2,0)	(4,3 - 5,2)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min	500		1050
	cm³/10 s	55 - 100 (40-110)		55 - 100 (40 - 110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1150-1200 (1130-1220)	0		
		1120		(10,0-20,0)	
		1020	60,0-63,0	(59,0-64,0)	
		800		(59,5-61,5)	
		500	56,5-59,5	(55,5-60,5)	
	Stop	1050	0		
Idle stop	Full	480-530 (460-550)	0		
		400		(6,0-14,0)	
End stop	Start	100	mind. 85,0		
		220-300			

G7

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 3,5 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 2,3 c
2. Edition
En

VA 3/90 H 1200 BR 143
0 460 393 004

superseded 5.70
company Steyr
engine WD 307

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Instructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	--	--	mm		
1.2 Supply pump pressure	1200	6,3-6,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	54,0-55,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	13,0-19,0	cm³/1000 strokes		3,0
1.5 Start	100	mind. 70,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	17,0-25,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min		
	mm		
2.2 Supply pump	rev/min	100	1200
	kp/cm²	1,0-1,5(0,8-1,7)	6,3-6,8(6,1-7,0)
Overflow delivery	rev/min	500	1000
	cm³/10 s	mind. 25	55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1220-1380 (1300-1400)	0		
		1370	< 5,0		
		1300		(16,0-26,0)	
		1180	53,5-56,5	(52,5-57,5)	
		800		(53,5-55,5)	
		500	56,0-59,0	(55,0-60,0)	
	Stop	1200	0		
Idle stop	Full	340-410 (320-430)			
		250		(12,0-20,0)	
	Start	100	mind. 70,0		
End stop		110-210			

Testoil-ISO 4113

G9

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = - mm Dimension V = - mm

G10

En

G10

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 2,3 c 2
1. Edition
En

VA 4/90 H 1200 BR 144
0 460 394 004

supersedes
company Steyr
engine WD 407

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	--	--	mm		
1.2 Supply pump pressure	1000	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	53,0-54,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	14,5-20,5	cm³/1000 strokes		3,0
1.5 Start	100	mind.76,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1270	21,0-29,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min		
	mm		
2.2 Supply pump	rev/min	100	1000
	kp/cm²	0,8-1,3(0,6-1,5)	(5,1-6,0)
Overflow delivery	rev/min	500	1000
	cm³/10 s	mind. 25	55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1310-1350	0		
		(1290-1370)			
		1270		(20,0-30,0)	
		1150	55,5-58,5	(54,5-59,5)	
		900		(52,5-54,5)	
		500	51,5-54,5	(50,5-55,5)	
	Stop	1200	0		
Idle stop	Full	330-380	0		
		(310-400)			
		250		(13,5-21,5)	
	Start	100	mind. 76,0		
End stop		110-210			

Testoil-ISO 4113

G11

Angle to the stop-plate	Pre-setting dimension
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = - mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,4 a
3. Edition
En

Testoil-ISO 4113

VA 3/100 H 950 BR 9 — Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes 4.69
company IHC
engine XDD 155

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	500	7,1-8,1	mm		
1.2 Supply pump pressure	500	5,0-5,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	700	58,5-59,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	15,0-21,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1000	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	120-270 (90-300)	500	700-850
	mm	Start	(6,8-8,4)	12,7-13,4(12,4-13,7)
2.2 Supply pump	rev/min	100	500	950
	kp/cm²	2,2-2,7(2,0-2,9)	(4,8-5,7)	7,0-7,5(6,8-7,7)
Overflow delivery	rev/min	500		950
	cm³/10 s	mind. 27		55-125(40-135)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1020-1070 (1000-1090)	0		
		1000		(35,0-45,0)	
		930	62,5-65,6	(61,5-66,5)	
		700		(58,0-60,0)	
		500	53,0-56,0	(52,0-57,0)	
	Stop	950	0		
Idle stop	Full	460-510 (440-530)	0		
		400		(14,0-22,0)	
	Start	100	mind.90,0		
End stop		500	34,0-48,0	(33,0-49,0)	
		mind.180			

G13

G13

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 2,0 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,4 c
2. Edition
En

Testoil-ISO 4113

VA 3/100 H 1250 BR 9-1

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 6.69
company IHC
engine D 155

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	900	6,8-7,8	mm		
1.2 Supply pump pressure	900	4,7-5,2	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1000	65,0-66,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	9,5-15,5	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1330	32,0-40,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-500 (320-530)	900	1120-1250
	mm	Start	(6,5-8,1)	9,7-10,4(9,4-10,7)
2.2 Supply pump	rev/min	100	900	1250
	kp/cm²	0,8-1,3(0,6-1,5)	(4,5-5,4)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500	1000	1250
	cm³/10 s	mind. 27	55-125(40-135)	55-125(40-135)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1380-1430 (1360-1450)	0		
		1330		(31,0-41,0)	
		1230	61,0-64,0	(60,0-65,0)	
		1000		(64,5-66,5)	
		500	54,5-57,5	(53,5-58,5)	
	Stop	1250	0		
Idle stop	Full	340-390 (320-410)	0		
		300		(8,5-16,5)	
	Start	100	mind.90,0		
		500	max. 50,0		
End stop		mind.150			

G15

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 56 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 1,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,9 b
3. Edition
En

Testoil-ISO 4113

VA 3/100 H 1050 BR 112 Nozzle-and-holder assembly 1 688 901 020 (172 + 3 bar)

supersedes 4.69
company IHC
engine D 179

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	600	7,8-8,8	mm		
1.2 Supply pump pressure	600	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	70,5-71,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	17,0-23,0	cm³/1000 strokes		3,0
1.5 Start (mech.) 196bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1150	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	180-330(150-360)	600	840-1000
	mm	Start	(7,5-9,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	600	1050
	kp/cm²	1,2-1,7(1,0-1,9)	(4,3-5,2)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500		1000
	cm³/10 s	mind.25		55-125(40-140)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1170-1250	0		
		(1150-1270)			
		1210	< 3,0		
		1150		(25,0-35,0)	
		1030	73,0-76,0	(72,0-77,0)	
		800		(70,0-72,0)	
		500	65,5-69,5	(64,5-70,5)	
	Stop	1050	0		
Idle stop	Full	440-500	0		
		(420-520)			
		400		(16,0-24,0)	
	Start	100	mind.90,0		
		500	max. 60,0		
End stop		mind.150			

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 0,5 mm (see BMP) Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 b 3
1. Edition

En

VA 4/100 H 1250 BR 63-1

supersedes
company IHC
engine D 239

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	8,8-9,8	mm		
1.2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	69,5-70,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	11,0-17,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	44,0-52,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	800	1050-1200
	mm	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm²	1,3-1,8(1,1-2,0)	(4,7-5,6)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind.25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1400	0		
		(1330-1420)			
		1300		(43,0-53,0)	
		1300	Start		
		1200	66,5-69,5	(65,5-70,5)	
		800		(69,0-71,0)	
		500	67,5-70,5	(66,5-71,5)	
	Stop	1250	0		
Idle stop	Full	390-440	0		
		(370-460)			
		350		(10,0-18,0)	
	Start	100	mind.90,0		
		500	35,0-65,0	(34,0-66,0)	
End stop		mind.180			

G19

BOSCH Geschaftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 IHC 3,9 b 2
1. Edition

En

VA 4/100 H 1250 BR 63

supersedes
company IHC
engine D 239

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	8,8-9,8	mm		
1.2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	66,6-67,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1350	28,5-36,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	200-350(170-380)	800	1050-1200
	mm	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1250
	kp/cm²	1,3-1,8(1,1-2,0)	(8,6-10,0)	6,5-7,0(6,3-7,2)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind.25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1400 (1330-1420)	0		
		1330		(27,5-37,5)	
		1200	61,0-64,0	(60,0-65,0)	
		800		(66,0-68,0)	
		500	63,5-66,5	(62,5-67,5)	
	Stop	1250	0		
Idle stop	Full	390-440 (370-460)	0		
		350		(11,0-19,0)	
	Start	100	mind.90,0		
		500	max.35,0-60,0		
End stop		mind.180			

G21

G21

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,9 c 2
1. Edition
En

VA 3/100 H 1100 BR 62

supersedes
company IHC
engine D 179

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	600	5,9-6,9	mm		
1.2 Supply pump pressure	600	3,9-4,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	63,5-64,6	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	375	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1200	21,0-29,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	120-270(90-300)	600	900-1030
	mm	Start	(5,6-7,2)	11,7-12,4(11,4-12,7)
		100	600	1100
2.2 Supply pump	rev/min			
	kp/cm²	0,8-1,5(0,6-1,5)	(3,7-4,6)	6,1-6,6(5,9-6,8)
		500	1000	
Overflow delivery	rev/min			
	cm³/10 s	mind.25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1210-1270	0		
		(1190-1290)			
		1200		(20,0-30,0)	
		1100	66,5-69,5	(65,5-70,5)	
		800		(63,0-65,0)	
		500	65,0-68,0	(64,0-69,0)	
	Stop	1100	0		
Idle stop	Full	440-520	0		
		(420-540)			
		375		(11,0-19,0)	
	Start	100	mind.90,0		
		500	35,0-57,0	(34,0-58,0)	
End stop		mind. 150			

G23

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 55 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV= 0,5 mm (see BMP 16!/32) Dimension V= - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,9 c
2. Edition
En

VA 3/100 H 1200 BR 61

supersedes 10.69
company IHC
engine D 179

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	8,8-9,8	mm		
1.2 Supply pump pressure	800	5,0-5,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	67,0-68,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	375	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (mech.) 196 bar	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	170-320(140-350)	800	1050-1200
	mm	Start	(8,5-10,1)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	800	1200
	kp/cm²	1,0-1,5(0,8-1,7)	(4,8-5,7)	6,7-7,2(6,5-7,4)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind.25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1360	0		
		(1330-1380)			
		1300		(30,0-40,0)	
		1150	72,0-75,0	(71,0-76,0)	
		800		(66,5-68,5)	
		500	63,5-66,5	(62,5-67,5)	
	Stop	1200	0		
Idle stop	Full	440-520	0		
		(420-540)			
		375		(11,0-19,0)	
	Start	100	mind.90,0		
		500	max. 35,0-62,5		
End stop		mind.150			

H1

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 0,5 mm (see BMP 161/32) Dimension V = - mm

Prüfwerte Verteiler-Einspritzpumpen

WPP 001/4 IHC 3,9 d
2. Ausgabe
De

VA 4/100 H 1250 BR 60
0 460 304 102

ersetzt 12.70
Firma: IHC
Motor: D 239

Düsenhalterkombination
1 688 901 020 (172 + 3 bar)

Samtliche Prufwerte gelten nur fur BOSCH-Einspritzpumpen-Prufstande und Prüfgerate Prüfanleitung und Prüfausrüstung VDT-WPP 161/4
Voreinstellung siehe Ruckseite

Vorhub-Einstellung 0,5 mm
Kolbenhub 1,0 mm bezogen auf Auslaß "A"

1. Einstellwerte	Drehzahl min⁻¹	Einstellwerte		Ladedruck bar (kp/cm²)	Mengenunterschied cm³
1.1 Spritzverstellerweg	700	8,5-9,5	mm		
1.2 Förderpumpendruck	700	4,6-5,1	bar (kp/cm²)		
1.3 Vollastmenge ohne Ladedruck	900	71,5-72,5	cm³/1000 Hübe		2,5
Vollastmenge mit Ladedruck	--	--	cm³/1000 Hübe		
1.4 Leerlauf-Abregelung	400	19,5-25,5	cm³/1000 Hübe		3,0
1.5 Start (mech.) 196 bar	100	mind.90,0	cm³/1000 Hübe		
1.6 End-Abregelung	1300	41,0-49,0	cm³/1000 Hübe		

Testoil-ISO 4113

2. Prüfwerte

Überprüfwerte in Klammern

2.1 Spritzversteller	min⁻¹	150-300 (120-330)	700	950-1100
	mm	Beginn	(8,2-9,8)	13,7-14,4(13,4-14,7)
2.2 Förderpumpe	min⁻¹	100	700	1250
	bar (kp/cm²)	1,5-2,0(1,3-2,2)	(4,4-5,3)	6,1-6,6(5,9-6,8)
Überlaufmenge	min⁻¹	500	1000	
	cm³/10s	mind. 25	55-125(40-140)	

2.3 Fördermengen

Drehzahlhebel	Mengenhebel	Drehzahl min⁻¹	Fördermenge cm³/1000 Hübe		Ladedruck bar (kp/cm²)
Endanschlag	Voll	1330-1390	0		
		(1310-1410)			
		1300		(40,0-50,0)	
		1200	69,5-72,5	(68,5-73,5)	
		900		(71,0-73,0)	
		500	66,5-69,5	(65,5-70,5)	
	Stop	1250	0		
Leerlaufanschlag	Voll	480-540	0		
		(460-560)			
		400		(18,5-26,5)	
	Start	100	mind.90,0		
		500	max. 35,0-65,0		
Endanschlag		mind. 25			

H3

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 43 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 0,5 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 5,8 v 1
1. Edition
En

VA 6/100 H 1450 BR 59
0 460 306 093

supersedes
company IHC
engine D 358

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,4 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	900	8,6-9,6	mm		
1.2 Supply pump pressure	900	5,4-5,9	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1100	75,5-76,5	cm³/1000 strokes		
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	500	9,5-15,5	cm³/1000 strokes		
1.5 Start	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1550	24,0-32,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	250-400 (220-430)	900	1200-1330
	mm	Start	(8,3-9,9)	13,7-14,4(13,4-14,7)
2.2 Supply pump	rev/min	100	900	1450
	kp/cm²	1,3-1,8(1,1-2,0)	(5,2-6,1)	7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500	1500	
	cm³/10 s	mind. 25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1630-1740 (1610-1760)	0		
		1630	< 10,0		
		1550		(23,0-33,0)	
		1420	68,5-71,5	(67,5-72,5)	
		1100		(75,0-77,0)	
		500	62,5-66,5	(61,5-67,5)	
	Stop	1450	0		
Idle stop	Full	590-680 (570-700)	0		
		500		(8,5-16,5)	
	Start	100	mind.80,0		
		500	mind.35,0		
End stop		mind.180			

Testoil-ISO 4113

H5

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = - mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 4,0 a 1
2. Edition
En

VA 4/100 H 1200 CR 145-1
0 460 304 144

supersedes 7.71
company Steyr
engine WD 410

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	2,6-3,4	mm		
1.2 Supply pump pressure	800	4,3-4,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	700	69,5-71,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	16,0-22,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1280	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	330-550(300-580)	800	1070-1200
	mm	Start	(2,3-3,7)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	200	800	1200
	kp/cm²	1,4-1,9(1,2-2,1)	(4,1-5,0)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1200
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1350-1400			
		(1330-1380)			
		1280		(35,0-45,0)	
		1150	70,0-72,0	(69,0-73,0)	
		700		(69,0-72,0)	
		500	67,0-70,0	(66,0-71,0)	
	Stop	1200	0		
Idle stop	Full	310-400	0		
		(290-420)			
		250		(15,0-23,0)	
	Start	100	mind.80,0		
End stop		150-250			

H7

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,5 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,9 a
2. Edition
En

Testoil-ISO 4113

VA 4/10 H 1100 CR 187/2 0 460 304 244
CR 187/2 P Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 5.80
company IHC
engine D 239

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	900	3,9-4,7	mm		
1.2 Supply pump pressure	900	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	73,0-74,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.85,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1170	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	--	500	900
	mm	Start	1,1-2,1(0,8-2,4)	(3,6-5,0)
2.2 Supply pump	rev/min	200	900	1100
	kp/cm²	1,4-1,9(1,2-2,1)	(4,7-5,6)	5,7-6,2(5,5-6,4)
Overflow delivery	rev/min	500		1100
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1200-1250	0		
		(1180-1270)			
		1170		(30,0-40,0)	
		1080	70,25-72,75	(69,25-73,25)	
		800		(72,5-74,5)	
		500	71,0-73,0	(70,0-74,0)	
	Stop	1100	0		
Idle stop	Full	400-450	0		
		(380-470)			
		350		(11,0-19,0)	
End stop	Start	100	mind.85,0		
		260-360			

H9

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,00 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 3,5 c 7
1. Edition
En

VA 4/100 H 1250 CR 68-1 P
0 460 304 231

supersedes
company IHC
engine D 206

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,5 mm ± 0,02 (± 0,04)
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	4,2-5,2	mm		
1.2 Supply pump pressure	800	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	55,5-56,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (196 bar)	100	min.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	Start 170-320	400	800	1000	1100-1250
	mm	1,2-2,2(0,9-2,5)	(3,9-5,5)	5,7-6,7(5,4-7,0)		Ende(7,0-7,7)
2.2 Supply pump	rev/min	200	800		1250	
	kp/cm²	2,1-2,6(1,9-2,8)	(5,1-6,0)		7,1-7,6(6,9-7,8)	
Overflow delivery	rev/min				1250	
	cm³/10 s				55-100(40-110)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1260-1280	Start		
		1200	51,0-54,0	(50,0-55,0)	
		800		(55,0-57,0)	
		500	48,0-51,0	(47,0-52,0)	
	Stop	1250	0		
Idle stop	Full	420-470	0		
		350	12,0-18,0	(11,0-19,0)	
		100	min. 90,0		
End stop	Start	220-320			

H11

H11

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 3,0 mm Dimension V = 24,65 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 IHC 2,9 b 1
3. Edition
En

VA 3/100 H 1050 CR 11-1
(see VDT-WPP 161/4, Suppl. 1)

supersedes 7.73
company IHC
engine D 179 tractor 523

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0 mm
Plunger lift of 1,0 mm related to outlet "A"

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	3,3-4,1	mm		
1.2 Supply pump pressure	700	4,5-5,0	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	65,0-61,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	400	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1100	41,0-49,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	250-400(220-430)	500	700	850-1000
	mm	Start	1,1-2,1(0,8-2,4)	(3,0-4,4)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200		700	1050
	kp/cm²	2,0-2,5(1,8-2,3)		(4,3-5,2)	5,8-6,3(5,6-6,5)
Overflow delivery	rev/min	500			1050
	cm³/10 s	55-100(40-110)			55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1140-1200 (1120-1220)	0		
		1100		(40,0-50,0)	
		1050-1070	Start		
		1000	71,0-74,0	(70,0-75,0)	
		800		(61,5-64,5)	
		500	61,0-64,0	(60,0-65,0)	
	Stop	1050	0		
Idle stop	Full	470-550 (450-570)	0		
		400		(11,0-19,0)	
	Start	100	mind.90,0		
End stop		220-300			

H13

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV= 4,2 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 HAN 3,1
1. Edition
En

Testoil-ISO 4113

VA 6/100 H 1300 CR 54-2
0 460 306 115

supersedes

company Hanomag

engine D 161 R-75 PS

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting mm

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	1,6-2,4	mm		
1.2 Supply pump pressure	1000	4,6-5,1	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1100	50,5-51,5	cm³/1000 strokes		
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0	cm³/1000 strokes		
1.5 Start	100	mind.65,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1400	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	620-770(590-800)	1000	1020-1170
	mm	Start	(1,3-2,7)	2,5-3,2(2,2-3,5)
2.2 Supply pump	rev/min	100	1000	1300
	kp/cm²	0,8-1,3(0,6-1,5	(4,4-5,3)	5,6-6,1(5,4-6,3)
Overflow delivery	rev/min	500		1300
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1450-1500 (1430-1520)	0		
		1400		(30,0-40,0)	
		1300	50,5-53,5	(49,5-54,5)	
		1100		(50,0-52,0)	
		500	48,5-51,5	(47,5-52,5)	
	Stop	1300	0		
Idle stop	Full	400-450 (380-470)	0		
		300		(11,0-19,0)	
	Start	100	mind.65,0		
End stop		mind.150			

H15

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = - mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

En

46

WPP 001/4 HAN 3,1 d 5

1. Edition

VA 4/100 H 1300 CR 53
0 460 304 145

supersedes

company Hanomag

engine D 142 R 8/6

Testoil-ISO 4113

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting mm

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1100	2,5-3,3	mm		
1.2 Supply pump pressure	1100	4,8-5,3	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1100	47,5-48,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.75,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1400	36,0-44,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	600-750(570-780)	1100	1150-1270
	mm	Start	(2,2-3,6)	3,4-4,1(3,1-4,4)
2.2 Supply pump	rev/min	200	1100	1300
	kp/cm²	1,1-1,6(0,9-1,8)	(4,6-5,5)	5,3-5,8(5,1-6,0)
Overflow delivery	rev/min	500		1300
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1500-1600 (1480-1520)	0		
		1400		(35,0-45,0)	
		1300	46,0-49,0	(45,0-50,0)	
		1100		(47,0-49,0)	
		600	49,0-53,0	(48,0-54,0)	
	Stop	1300	0		
Idle stop	Full	500-580 (480-600)	0		
		350		(11,0-19,0)	
	Start	100	mind.75,0		
End stop		150-250			

H17

H17

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = -- mm Dimension V = -- mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 SAV 2,5 a 1

2. Edition

En

Testoil-ISO 4113

VA 3/100 H 1250 CR 152
0 460 303 102

supersedes 11.73
company Saviem
engine 714-30-01

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,4 mm ± 0,02(± 0,04)

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1000	3,2-4,0	mm		
1.2 Supply pump pressure	1000	5,3-5,8	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	56,5-57,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	7,0-13,0	cm³/1000 strokes		3,0
1.5 Start (autom.)	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1300	33,5-41,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	450-600(420-630)	1000	1150-1300
	mm	Start	(2,9-4,3)	5,2-5,9(4,9-6,2)
2.2 Supply pump	rev/min	200	1000	1250
	kp/cm²	1,5-2,0(1,3-2,2)	(5,1-6,0)	6,2-6,7(6,0-6,9)
Overflow delivery	rev/min	500		1250
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1380-1430	0		
		(1360-1450)			
		1300		(32,5-42,5)	
		1250-1280	Start		
		1230	58,0-61,0	(57,0-62,0)	
		900		(56,0-58,0)	
		500	52,0-55,0	(51,0-56,0)	
	Stop	1250	0		
Idle stop	Full	340-410	0		
		(320-430)			
		300		(6,0-14,0)	
	Start	100	mind.80,0		
End stop		110-210			

H19

BOSCH

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 45 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 4,0 mm Dimension V = 25,0 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 MWM 2,5 c

1. Edition

En

VA 3/100 H 1150 BR 66

0 460 303 111

supersedes

company MWM

engine D 935-L3

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,4 mm

Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	6,2-7,2	mm		
1.2 Supply pump pressure	800	5,1-5,6	kp/cm²		
1.3 Full-load delivery without charge-air pressure	900	60,0-61,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	10,0-16,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1250	< 7,5	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	300-450(270-480)	800	930-1050
	mm	Start	(5,9-7,5)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	800	1150
	kp/cm²	1,7-2,2(1,5-2,4)	(4,9-5,8)	6,1-6,6(5,9-6,8)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind.25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1220-1270	0		
		(1200-1290)			
		1250	max. 7,5		
		1160-1180	Start		
		1130	58,5-61,5	(57,5-62,5)	
		900		(59,5-61,5)	
		500	53,0-56,0	(52,0-57,0)	
	Stop	1150	0		
Idle stop	Full	360-420	0		
		(340-440)			
		250		(9,0-17,0)	
	Start	100	mind.80,0		
		500	30,0-54,0	(29,0-55,0)	
End stop		mind.150			

H21

Angle to the stop plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 ± 8°	Pump Dimension IV = 4,0 mm Dimension V = - mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 GUL 3,1 a 3
1. Edition
En

VA 4/100 H 1000 BR 112
0 460 303 052

supersedes
company Guldner
engine 4 L 79

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,1 mm
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	700	6,2-7,2	mm		
1.2 Supply pump pressure	700	4,0-4,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	700	50,0-51,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	7,0-13,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.110,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1040	16,0-24,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	280-430(250-460)	700	830-970
	mm	Start	(5,9-7,5)	8,7-9,4(8,4-9,7)
2.2 Supply pump	rev/min	100	700	1000
	kp/cm²	0,8-1,3(0,6-1,5)	(3,8-4,7)	5,1-5,6(4,9-5,8)
Overflow delivery	rev/min	500	1000	
	cm³/10 s	mind. 25	55-125(40-140)	

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1030-1080	0		
		(1010-1100)			
		1040		(15,0-25,0)	
		990-1020	Start		
		980	54,5-57,5	(53,5-58,5)	
		700		(49,5-51,5)	
		500	42,5-45,5	(41,5-46,5)	
	Stop	100	0		
Idle stop	Full	280-340	0		
		(260-360)			
		250		(6,0-14,0)	
	Start	100	mind.110,0		
End stop		120-220			

H23

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = - mm Dimension V = - mm Dimension I = 7,0 mm Dimension II = 9,0 mm Dimension III = 30,8 mm

H 34

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 6,0 g
2. Edition
En

Testoil-ISO 4113

VA 6/100 H 1300 CR 153
0 460 306 127

supersedes 3.72
company Steyr
engine WD 610.01

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,1 mm ± 0,02 (± 0,04)

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1 1 Timing device travel	700	2,4-3,4	mm		
1 2 Supply pump pressure	700	4,0-4,5	kp/cm²		
1 3 Full-load delivery without charge-air pressure	1300	60,5-61,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1 4 Idle speed regulation	350	7,0-13,0	cm³/1000 strokes		3,0
1 5 Start (autom.)	100	mind.85,0	cm³/1000 strokes		
1 6 Full-load speed regulation	1450	26,0-34,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	250-400(220-430)	700	900-1050
	mm	Start	(2,1-3,7)	4,3-5,0(4,0-5,3)
2 2 Supply pump	rev/min	200	700	1300
	kp/cm²	1,4-1,9(1,2-2,1)	(3,8-4,7)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1300
	cm³/10 s	55-100(40-110)		55-100(40-110)

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1500-1560 (1480-1580)	0		
		1450		(25,0-35,0)	
		1300		(60,0-62,0)	
		1000	60,0-62,0	(59,0-63,0)	
		500	60,5-64,5	(59,5-65,5)	
	Stop	1300	0		
Idle stop	Full	450-520 (430-540)	0		
		350		(6,0-14,0)	
End stop	Start	100	mind.85,0		
		110-220			

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 55 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 1,00 mm Dimension V = 24,60 mm

J2

En

J2

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 2,0 a 1
2. Edition

En

Testoil-ISO 4113

VA 2/100 H 1100 CR 156
0 460 302 007

supersedes 11.73
company Steyr
engine WD 210.40

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	3,0-4,0	mm		
1.2 Supply pump pressure	800	4,4-4,9	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1050	60,5-61,5	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	250	13,0-19,0	cm³/1000 strokes		3,0
1.5 Start (autom.)	100	mind.90,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1250	11,0-19,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-500(320-530)	800	880-1030
	mm	Start	(2,7-4,3)	4,2-4,9(3,9-5,2)
2.2 Supply pump	rev/min	200	800	1100
	kp/cm²	1,4-1,9(1,2-2,1)	(4,2-5,1)	5,5-6,0(5,3-6,2)
Overflow delivery	rev/min	500		1100
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1270-1320 (1250-1340)	0		
		1250		(10,0-20,0)	
		1050		(60,0-62,0)	
		900	60,0-62,0	(59,0-63,0)	
		500	65,5-68,5	(64,5-69,5)	
	Stop	1100	0		
Idle stop	Full	300-370 (280-390)	0		
		250		(12,0-20,0)	
	Start	100	mind.90,0		
End stop		120-220			

J3

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 35 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 4,0 mm Dimension V = 24,6 mm

J4

En

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 FIA 1,9c 1
2. Edition
En

VA 4/90 H 1900 CR 157-1
0 460 394 017

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

supersedes 7.73
company Fiat
engine 237 AZ

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1500	5,1-6,1	mm		
1.2 Supply pump pressure	1500	6,0-6,5	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1500	33,0-34,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	300	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start (autom.)	100	mind.65,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1950	16,0-24,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	400-550(370-580)	1500	1650-1800
	mm	Start	(4,8-6,4)	6,1-6,8(5,8-7,1)
2.2 Supply pump	rev/min	200	1500	1900
	kp/cm²	1,1-1,6(0,9-1,8)	(5,8-6,7)	7,1-1,7(6,9-7,8)
Overflow delivery	rev/min	500		1900
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	2100-2220 (2080-2240)	0		
		1950		(15,0-25,0)	
		1800	31,5-34,5	(30,5-35,5)	
		1500		(32,5-34,5)	
		500	29,0-32,0	(28,0-33,0)	
	Stop	1900	0		
Idle stop	Full	440-520 (420-540)	0		
		300		(11,0-19,0)	
--	Start	100	mind.65,0		
End stop		200-300			

Testoil-ISO 4113

J5

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 40 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 3,0 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 HAN 4,7 a 2
1. Edition
En

Testoil-ISO 4113

VA 6/100 H 1700 CR 151-2. Nozzle-and-holder assembly
0 460 306 135 1 688 901 020 (172 + 3 bar)

supersedes

company Hanomag
engine D 162 L

Setting of the pointer at a stroke of 1 mm in relation to outlet "A".

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02(± 0,04) |

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1300	4,7-5,5	mm		
1.2 Supply pump pressure	1300	5,9-6,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1000	54,0-55,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.65,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1800	32,0-38,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	550-700(520-730)	1300	1530-1680
	mm	Start	(4,4-5,8)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	100	1300	1700
	kp/cm²	0,4-1,0(0,2-1,2)	(5,7-6,6)	7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500		1700
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1880-1960	0		
		(1860-1980)			
		1800		(31,0-39,0)	
		1700	54,0-57,0	(53,0-58,0)	
		1000		(53,5-55,5)	
		500	49,0-53,0	(48,0-54,0)	
	Stop	1700	0		
Idle stop	Full	500-600	0		
		(480-620)			
		350		(11,0-19,0)	
	Start	100	mind.65,0		
End stop		200-300			

J7

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 4,0 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 HAN 4,7 a 1
3. Edition
En

VA 6/100 H 1700 CR 151
0 460 306 113

supersedes 7.71
company Hanomag
engine D 162 L

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)
Plunger lift of 1,0 mm related to outlet "A"

Testoil-ISO 4113

1. Settings

	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	1300	4,7-5,5	mm		
1.2 Supply pump pressure	1300	5,9-6,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	1000	54,0-55,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	350	12,0-18,0	cm³/1000 strokes		3,0
1.5 Start	100	mind.65,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1800	31,0-39,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	550-700(520-730)	1300	1530-1680
	mm	Start	(4,4-5,8)	6,9-7,6(6,6-7,9)
2.2 Supply pump	rev/min	100	1300	1700
	kp/cm²	0,4-0,9(0,2-1,1)	(5,7-6,6)	7,2-7,7(7,0-7,9)
Overflow delivery	rev/min	500		1700
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1880-1960 (1860-1980)	0		
		1800		(30,0-40,0)	
		1700	54,0-57,0	(53,0-58,0)	
		1000		(53,5-55,5)	
		500	49,0-53,0	(48,0-54,0)	
	Stop	1700	0		
Idle stop	Full	500-600 (480-620)	0		
		350		(11,0-19,0)	
--	Start	100	mind.		
End stop		200-300			

J9

J.9

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 50 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 4,0 mm Dimension V = 24,6 mm

Test Specifications Distributor-Type Fuel Injection Pump

WPP 001/4 STE 6,0 g 1
2. Edition
En

VA 6/100 H 1100 CR 150
0 460 306 126

supersedes 11.73
company Steyr
engine WD 610.42

Nozzle-and-holder assembly
1 688 901 020 (172 + 3 bar)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers
Test Intructions and Test Equipment VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting 0,3 mm ± 0,02 (± 0,04)

Testoil-ISO 4113

1. Settings	rev/min	Settings		Charge-air press kp/cm²	Difference in delivery cm³
1.1 Timing device travel	800	2,9-3,7	mm		
1.2 Supply pump pressure	800	4,9-5,4	kp/cm²		
1.3 Full-load delivery without charge-air pressure	800	53,0-54,0	cm³/1000 strokes		2,5
Full-load delivery with charge-air pressure	--	--	cm³/1000 strokes		
1.4 Idle speed regulation	280	15,0-21,0	cm³/1000 strokes		3,0
1.5 Start (autom.)	100	mind.80,0	cm³/1000 strokes		
1.6 Full-load speed regulation	1190	21,0-29,0	cm³/1000 strokes		

2. Test Specifications

Checking values in brackets

2.1 Timing device	rev/min	350-480(320-510)	800	930-1080
	mm	Start	(2,6-4,0)	4,3-5,0(4,0-5,3)
2.2 Supply pump	rev/min	200	800	1100
	kp/cm²	1,7-2,2(1,5-2,4)	(4,7-5,6)	6,0-6,5(5,8-6,7)
Overflow delivery	rev/min	500		1100
	cm³/10 s	55-100(40-110)		55-100(40-110)

2.3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm³/1000 strokes		Charge-air pressure kp/cm²
End stop	Full	1250-1310	0		
		(1230-1330)			
		1190		(20,0-30,0)	
		1050	54,0-56,0	(53,0-57,0)	
		800		(52,5-54,5)	
		500	54,0-57,0	(53,0-58,0)	
	Stop	1100	0		
Idle stop	Full	360-420	0		
		(340-440)			
		280		(14,0-22,0)	
--	Start	100	mind.80,0		
End stop		150-250			

J11

Angle to the stop-plate	Pre-setting dimensions
Pump α = 25 ± 4° β = 55 ± 8° γ = 30 - 8° δ = 60 + 8°	Pump Dimension IV = 2,8 mm Dimension V = 24,6 mm

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 EIC 5,9c
2. Edition

En

PES 6 A 80 D 320 RS 1280 RSV 300-1150 A0B 2003 R

supersedes 4.80
company Eicher
engine EDK6-7 Turbo
98 kW (133 PS)

1 - 5 - 3 - 6 - 2 - 4 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,6+0,1	6,4 - 6,5	0,2(0,35)			
300	6,7-6,9	0,8 - 1,4	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed: 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.29	300	6,3	1130	10,6-10,7
	X	= 6,0					100	min.19,0	450	10,6-10,8
ca. 54 (2a)	1170-1180=9,7 1235-1265=4,0 1405=0,3- 1,7						300 430-490 600	6,7- 6,9 = 2,0 max. 1,0	350	11,8-12,4

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA	0,7 bar							
1130	65,0-66,0 (63,5-67,5)	1170-1180*			100	17,2-17,8 mm RW	300	6,8

Checking values in brackets

* 1 mm less control rod travel than col 2

J13

12.81

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1130 rev/min decreasing / increasing pressure - in bar gauge pressure

EIC 5,9 c

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6 A..RS 1280	0		8,1 - 8,2
with..AOB 2003 R		0,7	10,6 - 10,7
		0,15	9,9 - 10,0
		0,09	8,8 - 9,1

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 MB 5,7 v 7
2. Edition
En

PES 6 A 90 D 410 RS 2596 RSV 350-1400 A0B 1141 L

supersedes 5.81
company Daimler-Benz
engine OM 352 A
123 kW (168 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) 2,00-2,10 · mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,4+0,1	7,9 - 8,0	0,3(0,45)			
350	8,6-8,8	1,5 - 2,1	0,2(0,4)			
600	12,4+0,2					
500	11,4+0,1	c,Sp. 4 u. 5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	350	4,0	-	-
	X =	5,75					350	10,2-10,4		
ca.70	1440-1450	= 11,4					710-770	= 2,0		
(2a)	1535-1665	= 4,0								
	1680= 0,3 -	1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note. changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 78,5 - 79,5 (76,5 - 81,5)	1440-1450*	LDA	0,7 bar 67,0 - 69,0 (65,0 - 71,0)	100	79,25-89,25 bei 16,4 - 16,8 mmRW		
			LDA 500	0 bar 50,5 - 53,5 (48,5 - 55,5				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.81

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

J15

J15

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES6A..RS2596	0,7		12,4 - 12,5
with ..AOB 1141 L	0		11,4 - 11,5
	0,33		12,2 - 12,3
	0,15		11,6 - 11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Testing the hydraulic start-locking device

Locking at	0.45 - 0.55 bar
Unlocking at	0.25 - 0.35 bar

Test Specifications Fuel Injection Pumps and Governors

(1A)

40

WPP 001/4 DAF 8,3 k 1
2. Edition

En

PE 6 A 95 D 410 RS 2525, X, Y RSV 250-1200 A 5 B 2013 DL

supersedes 8.80
company DAF
engine DN825 (X, Y) DHR

Cold start test on EP/RSV governor according to Service Information

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,95-2,15) 2,00-2,10 RW9 mm (from BDC)

Port closing difference between control-rod travel 9 and max. 3-4°

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,8 - 11,0	0,3(0,6)			
250	5,9-6,1	0,8 - 1,0	0,3(0,5)			
600	11,2+0,1	C, Sp. 4-5	0,4(0,7)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.16	250	5,5	1000	12,6+0,1
	X =	3,0					100	min.19	400	12,6+0,2
ca.50	1230-1240=11,6						250	5,9-6,1	300	12,8+0,4
(2a)	1275-1305=4,0						585-645	= 2,0		
	1450=0,3-1,7						725	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 106,5-108,5 (104,5-110,5)	1230-1240*	LDA 600	0 bar 77,5-80,5 (75,5-82,5)	100	19,0-21,0 mm RW	250	6,1
X 1000	90,5- 92,5	(12,0mmRW)	X 600	77,0-80,0				
Y 1000	99,0-101,0	(12,5mmRW)	Y 600	77,0-80,0				

Checking values in brackets

* 1 mm less control rod travel than col 2

J17.

10.81

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
2525 with 2013 DL	0,7	0,27 0,23 0	12,6 - 12,7 12,2 - 12,3 11,5 - 11,8 11,2 - 11,3

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 EIC 2,9 a
3. Edition

En

PES 3 A 80 D 320 RS 1288 RSV 300-1075 A 1 B 722 DR (1)
RSV 300-1075 A 1 B 753 DR (2)

supersedes 4.80
company Eicher
engine EDK 3-7 (1)
EDK 3-4 (2)
38 kW (52 PS) (1)
31 kW (42 PS) (2)

1 - 3 - 2 je 120°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) / (2,15-2,25) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery (1) cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm³/100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1050	9,4-9,5	5,3-5,4	0,2(0,35)	8,2-8,3	4,2 - 4,3	n = 1050
300	7,4-7,6	1,1-1,5	0,2(0,3)			
800/500	- - -	C, Sp. 4-5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) RSV-722 DR

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0		-	-	-	ca.29	300	5,5	1050	9,4-9,5
	X = 5,5						100	min.19,0	685	9,5-9,7
ca.60	1090-1100 = 8,4						300	5,9-6,1	500	9,8-9,9
(2a)	1110-1140 = 4,0						370-430	= 2,0		
	1280= 0,3 - 1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1050	54,0-55,0 (52,5-56,5)	1090-1100*	800	48,5-50,5 (47,0-52,0)	100	109,5-119,5	300	7,5
			500	47,5-49,5 (46,0-51,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.81

J19

The numbers denote the sequence of the tests

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm + 0,1
1	2	3	4	5	6	7	8	9	10	11
loose	800 0,3-1,0 x = 4,5		-	-	-	ca.27	300	5,5	1050	8,2
							100	min.19,0	905	8,5
ca.58 ②	1090-1100 = 7,2 1105-1135 = 4,0 1275 = 0,3 -1,7						300 379 -	5,9-6,1 430 =2,0	500	8,8

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F)		⑥ Rotational-speed limitat. Note: changed to ...)	③a Fuel delivery characteristics		Starting fuel delivery Idle ⑤		④a Idle stop	
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1050	43,0-44,0 (42,0-45,0)	1090-1100*	900 600	43,5-46,5 (42,5-47,5) 40,5-42,5 (39,5-43,5)	100	109,5-119,5	300	7,5

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J20

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 EIC 2,9 a 1
3. Edition

En

PES 3 A 80 D 320 RS 1288 Z RSV 300-1000A1B 2084 R (1)
1288 RSV 300-1000A1B 2084 (2)

supersedes 8.80
company Eicher
engine EDK 3 (1)
EDK 3-8 u. EDK 3-9 (2)
37 kW(50 PS) (1)
31 kW(42 PS) (2)

1 - 3 - 2
0-120-240° + 0,50° (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC) 6

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
980	9,3-9,4	5,5-5,6	0,2(0,35)	8,5-8,6	4,3-4,4	n = 980
300	6,9-7,1	1,0-1,4	0,2(0,3)	7,4-7,6	1,1-1,7	

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

"Z"

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.13	300	6,5	980	9,3-9,4
	X	= 1,0					300	6,9-7,1	770	9,3-9,5
ca.40 (2a)	1020-1030 = 8,3 1025-1055 = 4,0 1190 = 0,3-1,7						100 450	min.19,0 max. 1,0	500	9,5-9,6
							335-395	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
980	55,5-56,5 (53,5.58,0)	1020-1030*			100	109,5 - 116,5	300	7,0

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH. Kundendienst Kfz-Ausrüstung

12.81

JJA

The numbers denote the sequence of the tests

B. Governor Settings

(1) Upper rated speed rev/min			Intermediate rated speed			(4) Lower rated speed			(3) Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800 x 0,3-1,0 2,25		-	-	-	ca.17	300	7,0	1000	8,5-8,6
							300	7,4-7,6	820	8,8-9,0
							100	min.19,0	500	9,2-9,3
ca.44	1020-1030 = 7,5						475	max. 1,0		
(2a)	1030-1060 = 4,0						355 -	415 =2,0		
	1200 = 0,3 -1,7									

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F)		(6) Rotational-speed limitat.	(3a) Fuel delivery characteristics		Starting fuel delivery Idle (5)		(4a) Idle stop	
rev/min	cm³/1000 strokes	Note: changed to ... rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
980	43,5-44,5 (42,0-46,0)	1020-1030*	700	42,0-45,0 (40,5-46,5)	100	109,0 - 116,5	300	7,0
			500	41,0-44,0 (39,5-45,5)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

J22

En

J22

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 3,8 m 1
3. Edition
En

PES 4 A 90 D 410 RS2294 EP/RSV 350-1500 A2 B741L (1)
RS2294 575-1100 A1 618L (2)

supersedes 2.79
company Daimler-Benz
engine OM 314
(1 - 51 kW - 69 PS)
(2 - 54 kW - 73 PS)

**Set idle-speed auxiliary spring at 2.0 mm control-rod travel, then 1/2 turn back.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1450	9,1-9,2	5,2 - 5,4	0,3(0,45)	10,5	6,1 - 6,3	n = 1080 min⁻¹
350	7,4-7,6	0,9 - 1,5	0,2(0,4)	+ 0,1 6,4-6,6	1,1 - 1,7	n = 575

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

741 L

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.21	350	7,5**	-	-
	X = 5,0						100	min.19		
ca.60 (2a)	8,1	1495-1505					350	7,4-7,6		
	4,2	1555-1570					435-495	= 2,0		
	1600	0,3 - 1,7					500	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat: Note changed to ... rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1450	52,5-53,5 (50,5-55,5)	1495-1505	-	-	100	14,7-15,3	-	-

./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

10,81

The numbers denote the sequence of the tests

618 L

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.28	575	5,5**	-	-
	x	= 2,4					100	min.19		
ca.58	9,5	1110-1120					575	5,4-5,6		
(2a)	1250	0,3 - 1,7					580-610	= 2,0		
							650	max. 1,0		

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1080	61,5-62,5 (59,5-64,5)	1110-1120*	-	-	100	14,7-15,3	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	 5	 6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
(2a)										

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ...) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9

Checking values in brackets

* 1 mm less control rod travel than col. 2

J24

J 24

En

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 n 6
2. Edition
En

PES 4 A 90 D 410 RS 2570 RQV 300-1400 AB 1065-3DL

supersedes 5.81
company: Daimler-Benz
engine: OM 314
57 kW (77 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 (2,20-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,5+0,1	5,9-6,0	0,3(0,45)			
300	8,3-8,5	0,9-1,5	0,2(0,4)			
400	11,3+0,2	C, Sp. 4u.5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500 1650	15,2-17,8 0 - 1,0	-	-	-	ca.24	100 300	min.10,0 8,3 - 8,5	250 600 1000	0,7-0,9 3,3-3,8 5,2-5,3
ca.63	9,5 4,0	1440-1450 1535-1565				(3a)	545-605 = 2,0 mm		1400	7,7

Torque control travel a = 1,0 mm

Set the stop screw to control-rod travel 3 - 3,5 mm.

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1400	59,0-60,0 (57,0-62,0)	1440-1450*	400	44,0-46,0 (42,0-48,0)	100	72,25-82,25 100-220 (80-240)	1400 1000 600 400	10,5+0,1 10,8+0,3 11,1+0,2 11,5+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

K1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 5,5 c
1. Edition
En

PES 6 A 90 D 410 RS 2633 RQV 300-1500 AB1152 L

supersedes -
company: FIAT
engine: 8060.04.661
81 kW (110 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1500	9,0-9,1	4,9-5,0	0,3(0,45)			
300	8,2-8,4	1,1-1,7	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1470	15,2-17,8	-	-	-	ca.17	100	min.9,0		
							300	8,2-8,4		
ca.59	8,0	1540-1550					900	max. 1,0		
	4,0	1635-1665								
	1800	0 - 1,0				330-430 (3a)				

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1500	48,5-49,5 (46,5-51.5)	1540-1550*	-	-	100	99,25-119,25 at 16,0-16,6 mm RW	1500	9,0+0,1
							500	9,6+0,1
							860	9,4+0,2
							1090	9,0+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.81

K2

PES 4 M 50 C 320 RS14 EP/MN 60 M 28 DR

~~superseded~~ -
company: Daimler-Benz
engine: OM 615
(Schweden)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2000	13,0 (+0,1)	3,1-3,3	0,2(0,25)			
250 1600/1000	9,1 (±0,1) Sect. C	0,4-1,0 col. 4-6	0,15(0,2) 0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
0,7+0,1	500-480	10	470	13,0	510	6,8,13,0	550	9,9-10,8	150	13,7-13,8
			490-	510*	550	1,5- 8,7	650	9,0-10,0	325	13,1-13,5
									470	13,0-13,1

control rod travel test (cols. 4–11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4–5) by means of shims*
cam adjustment (B 8–9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F): rev/min 1	Vacuum mm wat. col. 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col. 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col.	Control road travel from full-load to idle mm cm³/1000 strokes 8
2000	470	31,7-32,7 (30,7-33,7)	1600	300	29,4-30,9 (28,4-31,9)	500	525	2,0- 3,0
			1000	135	29,4-30,9 (28,4-31,9)	250	ca.550	4,5-10,5

Checking values in brackets

K4

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 HAN 10,8 h
3. Edition

En

PE 6 A 95 D 320 RS 2557 EP/RSV 350-1100 A8B1117DR

supersedes 2.81
company MF-Hanomag
engine D 962

** Test cold-start device according to VDT-I-DAF 001, page 2.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	10,0+0,1	9,1 - 9,3	0,3(0,6)			
400	7,9-8,1		0,3(0,5)			
700	10,5+0,2	C, 4-5	0,4(0,7)			
500	10,6+0,1					

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.23	400	7,5		
	X = 4,50						100	min.19	1100	10,0+0,1
							400	7,9 19	960	10,2+0,2
ca.52	1140-1150 = 9,0						580-640	= 2,0	500	10,6+0,1
(2a)	1165-1195 = 4,0						700	0 - 1		
	1375 = 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat (Note. changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1100	89,0-91,0 (87,0-93,0)	1140-1150*	700	93,0-96,0 (91,0-98,0)	100	19-21mmRW **	400	8,0 -
			500	83,5-86,5 (81,5-88,5)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.81

K5

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 e
1. Edition
En

PES 4 M 50 C 320 RS59 EP/MN 60 M 52 DR

supersedes -
company Daimler-Benz
engine OM 615
(Schweden)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) at max. RW

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2000	13,0 (+0,1)	3,1-3,3	0,2 (0,25)			
250	9,1 (±0,1)	0,4-1,0	0,15(0,2)			
1600/1000	Sect. C, col. 4-5		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [illegible]

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
0,7+0,1	500-480	10	470	13,0	540	7,2-13,0	540	10,0-11,0	470	13,0-13,1
			520-540*		600	0,3-6,5	650	9,3-10,3	325	13,2-13,5
									150	13,7-13,8

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F): rev/min 1	Vacuum mm wat. col. 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle: mm cm³/1000 strokes 8
2000	470	31,7-32,7 (30,7-33,7)	1600	300	29,4-31,0 (28,4-32,0)	500	550	2,0- 3,0
			1000	135	29,4-31,0 (28,4-32,0)	250	700	4,5-10,5

Checking values in brackets

6.76

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 f
1. Edition
En

PES 4 M 50 C 320 RS 14 RS 59 EP/MN 60 M 34 DR (1) M 34 DR (2)

supersedes -
company Daimler-Benz
engine OM 615
HHF-Transporter (1)
NG -Transporter (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) at 18 mm RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2000	13,2	3,2-3,4	0,2(0,25)			
	(+0,1)					
250	9,0-9,2	0,4-1,0	0,15(0,2)			
1600/1000	Sect. C, col. 4-6		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w c 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w c 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
1,2+0,1	500-480	10	500	13,2	540	7,0-13,2	650	9,4-10,4	500	13,2-13,3
			520 - 540*		650	0 - 3,6	800	ca. 8,5	425	13,2-13,5
									250	14,1-14,5
									150	14,4-14,5

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F): rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle mm cm³/1000 strokes 8
2000	500	32,7-33,7 (31,7-34,7)	1600	300	31,4-33,0 (30,4-34,0)	500	550	2,2- 3,2
			1000	135	31,9-33,5 (30,9-34,5)	250	700	4,5-10,5

Checking values in brackets

11.76

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

K7

PES 4 M 50 C 320 RS14 EP/MN 60 M 32 DR

supersedes 3.76
company Daimler-Benz
engine OM 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) at max. RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,3 (+0,1)	3,3-3,5	0,2 (0,25)			
250	9,1 (±0,1)	0,4-1,0	0,15(0,2)			
1600/1000	Sect. C, col. 4-6		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [ ]

Testoil-ISO 4113

B. Governor Settings

Torque control travel mm 1	Leakage Vacuum pressure drop mm water col. 2	Leakage Time at least s 3	Control-rod travel limitation breakaway* Vacuum mm w.c. 4	Control-rod travel limitation breakaway* Control rod travel mm 5	Control rod travel test Vacuum mm w.c. 6	Control rod travel test Control rod travel mm 7	Auxiliary spring auxiliary cam** Vacuum mm w.c. 8	Auxiliary spring auxiliary cam** Control rod travel mm 9	Torque control Vacuum mm w.c. 10	Torque control Control rod travel mm 11
0,6+0,1	500-480	10	490	13,3	530	8,8-13,3	600	10,1-11,1	75	13,8-13,9
					600	2,0-7,7	700	9,3-10,3	175	13,4-13,7
									300	13,3-13,4
			510 - 530						490	13,3-13,4

control rod travel test (cols. 4-11) = rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F) rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics rev/min 4	Vacuum mm wat. col. 5	cm³/1000 strokes 6	Idle (stop)** Idle (imbalance) rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle mm cm³/1000 strokes 8
2250	490	33,7-34,7 (32,7-35,7)	1600	350	30,4-32,0 (29,4-33,0)	500	530	2,0- 3,0
			1000	125	29,4-31,0 (28,4-32,0)	250	ca. 800	4,5-10,5

Checking values in brackets

K8

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 MB 2,0 d
4. Edition
En

PES 4 M 50 C 320 RS59 EP/MN 60 M 45 DR
EP/MN 60 M 49 DR

supersedes 2.76
company Daimler-Benz
engine OM 615

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2000	13,2 (+0,1)	3,2-3,4	0,2 (0,25)			
250	9,1 (±0,1)	0,4-1,0	0,15(0,2)			
1600/1000	Sect. C, col. 4-5		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [illegible]

Testoil-ISO 4113

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w c 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w c 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w c 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
1,2+0,1	500-480	10	500	13,2	540	6,8-13,2	575	9,8-10,8	150	14,4-14,5
			520 - 540		650	0 - 3,6	650	9,3-10,3	225	14,2-14,5
									400	13,2-13,5
									500	13,2-13,3

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp. 40°C (104°F): rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col. 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col.	Control road travel from full-load to idle mm cm³/1000 strokes 8
2000	500	32,7-33,7 (31,7-34,7)	1600	300	31,4-33,0 (30,4-34,0)	500	550	2,2- 3,2
			1000	135	31,9-33,5 (30,9-34,5)	250	700	4,5-10,5

Checking values in brackets

11.76

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 MB 2,0 a
4. Edition
En

PES 4 M 50 C 320 RS14 EP/MN 60 M 25 DR
RS14Z EP/MN 60 M 25 DR ./.

supersedes 3.76
company Daimler-Benz
engine OM 615 (200 D)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,7[illegible]0 mm (from BDC)
(1,65-1,85)

max. Control rod travel

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2000	13,2 (+0,1)	3,2-3,4	0,2 (0,25)	12,6 (+0,1)	2,9-3,1	
250	9,1 (±0,1)	0,4-1,0	0,15(0,2)	9,1 (±0,1)	0,4-1,0	
1600/1000	Sect. C, col. 4-6		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [illegible]

Testoil-ISO 4113

B. Governor Settings

25 DR with S14

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
1,2+0,1	500-480	10	470	13,2	510	7,2-13,2	550	9,8-10,8	150	14,4-14,5
					550	1,5- 8,9	625	9,3-10,3	225	14,1-14,5
			490 - 510*						400	13,2-13,5
									470	13,2-13,3

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp. 40°C (104°F): rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle mm cm³/1000 strokes 8
2000	470	32,7-33,7 (31,7-34,7)	1600	300	31,4-32,9 (30,4-33,9)	500	510	2,2- 3,2
			1000	135	31,9-33,4 (30,9-34,4)			
						250	ca. 800	4,5-10,5

Checking values in brackets

K10

B. Governor Settings

Torque control travel	Leakage		Control-rod travel limitation breakaway*		Control rod travel test		Auxiliary spring auxiliary cam**		Torque control	
	Vacuum pressure drop	Time at least	Vacuum	Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel	Vacuum	Control rod travel
mm	mm water col	s	mmw c	mm	mmw c	mm	mmw c	mm **	mmw c	mm
1	2	3	4	5	6	7	8	9	10	11
1,2+0,1	500-480	10	470	12,6	510	7,0-12,6	550	10,0-11,0	150	13,7-13,8
					550	1,6- 8,7	625	9,5-10,5	225	13,4-13,7
			490- 510						400	12,6-12,9
									470	12,6-12,7

control rod travel test (cols 4-11)
= rotational speed 500 rev/min
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F)			Fuel delivery characteristics			idle (stop)** idle (imbalance)		Control road travel from full-load to idle
rev/min	Vacuum mm wat col	cm^3/1000 strokes	rev/min	Vacuum mm wat col	cm^3/1000 strokes	rev/min	Vacuum mm wat col	mm cm^3/1000 strokes
1	2	3	4	5	6	7		8
2000	470	29,7-30,7 (28,7-31,7)	1600	300	28,4-29,9 (27,4-30,9)	500	525	1,5-2,5
			1000	135	28,9-30,4 (27,9-31,4)	250	ca.800	4,5-10,5

Checking values in brackets

Testoil-ISO 4113

K11

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 a 1
2. Edition
En

PES 4 M 55 C 320 RS 47 EP/MN 60 M 36 DR

supersedes
company s.u.
engine Daimler-Benz OM 615 HHF

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
1750	12,9 (+0,1)	3,4-3,6	0,2 (0,25)			
250	9,1 (±0,1)	0,4-1,0	0,15(,2)			

Adjust the fuel delivery from each outlet according to the values in [ ]

B. Governor Settings

Torque control travel mm 1	Leakage Vacuum pressure drop mm water col 2	Leakage Time at least s 3	Control-rod travel limitation breakaway* Vacuum mmw.c 4	Control-rod travel limitation breakaway* Control rod travel mm 5	Control rod travel test Vacuum mmw.c 6	Control rod travel test Control rod travel mm 7	Auxiliary spring auxiliary cam** Vacuum mmw.c 8	Auxiliary spring auxiliary cam** Control rod travel mm 9	Torque control Vacuum mmw.c. 10	Torque control Control rod travel mm 11
0	500-480	10	450	12,9	490 525	6,2-12,9 1,0- 8,6	525 625	10,7-11,7 9,9-10,9	-	-

470 - 490*

control rod travel test (cols. 4-11) = rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp. 40°C (104°F) rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance) rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle mm cm³/1000 strokes 8
1750	450	34,7-35,7 (33,7-36,7)				500	500	1,0- 2,0
						250	ca.500	4,5-10,5

Checking values in brackets

3.76

K12

K12

Test Specifications Fuel Injection Pumps and Governors

(1A)

40

WPP 001/4 EIC 2,9 b

1. Edition

En

PES 3 A 90 D 320 RS 2626 RSV 300-1075 A 1 B. 2146 R

supersedes -

company Eicher

engine EDL 3-5

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing prestroke 2,2-2,3 (2,15-2,35) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1075	12,4+0,1	8,3 - 8,4	0,2(0,45)			
300	6,9-7,1	0,7 - 1,3	0,2(0,4)			
500	13,4+0,1	C,Sp 4 u. 5	0,3(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.27	300	6,5	1075	12,4+0,1
	X =	5,0					100	min.19,0	870	12,8+0,2
							300	6,9-7,1	500	13,4+0,1
ca.60	11,4	1115-1125					385-445	= 2,0mm		
(2a)	4,0	1160-1190								
	1330	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to .) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1075	83,0 - 84,0 (81,0 - 86,0)	1115-1125*	500	83,0 - 84,0 (81,0 - 88,0)	100	19,0-21,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

10.81

K13

K13

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 DAF 6,2 k 1
2. Ausgabe

En

PE 6 A 85 D 320 RS 2546 RSV 250-1300 A 1 B 2025 R

supersedes 7.81
company DAF
engine DF 615

See Service Information VDT-I-DAF 004

Port closing difference between control-rod travel 9 and control-rod travel 21 = 3,0-4,0° camshaft

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1 - 2,3) mm (from BDC) at RW 9

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,2+0,1	5,5 - 5,6	0,3(0,45)			
250	7,3-7,7	1,4 - 1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.21	250	5,5	1000	10,2+0,1
	x =	4,0					100	min.19,0	400	10,2+0,2
							250	5,9-6,1	300	10,3+0,5
ca.67	9,2	1340-1350					310-370	= 2,0		
(2a)	4,0	1355-1385					600	max. 1,0		
	1540	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat Note. changed to ..) rev/min 3	(3a) Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle (5) rev/min 6	cm³/1000 strokes 7	(4a) Idle stop rev/min 8	Control rod travel mm 9
1000	55,0-56,0 (53,0-58,0)	1340-1350*	-	-	100	19,0-21,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.81

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung.

K14

K14

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 EIC 5,9 a
5. Edition

En

PES 6 A 80 D 320 RS 1280 RSV 300-1150 A0B 2005 R

supersedes 4.80
company Eicher
engine EDK 6-5 Turbo
98 kW (133 PS)

1 - 5 - 3 - 6 - 2 - 4 je 60°

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) 2,15-2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,6-10,7	6,4 - 6,5	0,2(0,35)			
300	7,4 - 7,6	1,3 - 1,9	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0		-	-	-	ca.30	300	5,5		
	X = 6,0						100	min.19,0		
ca.54 (2a)	1170-1180= 9,6						300	5,9-6,1		
	1230-1260=4,0						495-555	= 2,0		
	1425=0,3 - 1,7						650	0 - 1		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limital, Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	65,0-66,0 (63,5-67,5)	1170-1180*			100	16,0-16,6	300	7,5

Checking values in brackets

* 1 mm less control rod travel than col 2

12.81

BOSCH Geschäftsbereich KH Kundendienst. Kfz-Ausrüstung

K15

K15

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 EIC 3,9 e
2. Edition
En

PES 4 A 80 D 420 RS 1277 Z RSV 300-1000 A 1 B 643 DR

supersedes 8.80
company Eicher
engine EDK 4-8 u. EDK4-11
48 kW (65 PS)

1 - 2 - 4 - 3
0 -90 -180-270

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) / 2,15-2,25 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
980	9,3-9,4	5,2 - 5,3	0,2(0,3)			
300	7,4-7,6	1,1 - 1,5	0,2(0,3)			
800/500	- - -	C,Sp. 4-5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800 0,3-1,0		-	-	-	ca.27	300	5,5	980	9,3-9,4
	x = 5,25						300	5,9-6,1	810	9,6-9,8
ca.55	1020-1030 = 8,3						100	min. 19	500	9,9-10,0
(2a)	1040-1070 = 4,0						370-430	= 2,C		
	1210=0,3 - 1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to ...) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
980	52,5 - 53,5 (51,0 - 55,0)	1020-1030*	800	51,5-54,5 (50,0-56,0)	100	16,5-17,1 mm RW	300	6,0
			500	49,5-51,5 (48,0-53,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.81

K16

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 EIC 5,9 b
2. Edition

En

PES 6 A 80 D 320 RS 1280 RSV 300-1150 AOB 2001 DR

1 - 5 - 3 - 6 - 2 - 4 je 60°

supersedes 4.80
company Eicher
engine EDK 6-4
Engine suction
77 kW (105 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) / 2,15-2,25 mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	8,9-9,0	5,1 - 5,2	0,2(0,35)			
300	6,1-6,3	0,7 - 1,3	0,2(0,3)			
900/500	- - -	C, Sp 4-5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.26	300	5,7	130	8,9
	X = 5,25						100	min.19,0	785	9,2
ca.50	1170-1180=7,9						300	6,1-6,3	500	9,5
(2a)	1205-1235=4,0						485-545	= 2,0		
	1385=0,3-1,7						650	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat. Note: changed to ..) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1130	51,5-52,5 (50,0-54,0)	1170-1180*	900	48,5-51,5 (47,0-53,0)	100	16,3-16,9	300	6,2
			500	46,5-48,5 (45,0-50,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

12.81

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung.

K17

K17

Test Specifications Fuel Injection Pumps and Governors ② WPP 001/4 KHD 6,1 g

6. Edition En

Testoil-ISO 4113

PES 6 A 85 D 410/3 RS 2415 RQ 300/1250 AB 935 DL
Komb.-Nr. 0 400 856 024

supersedes 9.85
company: KHD
engine: BF 6 L 913 T
96 kW
at 2500 min^{-1}

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,1+0,1	8,0 - 8,1	0,3(0,45)			
300	8,3-8,5	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① rev/min 1	Control rod travel mm 2	Full-load speed regulation Setting point rev/min 3	Control rod travel mm 4	Test specifications ④ Control rod travel mm 5	rev/min 6	Idle speed regulation Setting point rev/min 7	Control rod travel mm 8	Test specifications ⑤ rev/min 9	Control rod travel mm 10	Torque control ③ rev/min 11	Control rod travel mm 12
800	19,2-20,8	800	20,0	11,1	1295-1310	300	8,4	100	min. 9,8	1250	12,1-12,2
VH =	max. 46°			4,0	1370-1400			300	8,3-8,5	800	13,3-13,4
				1500	0 - 1,0			570-610	=2,0	910	13,0-13,2
										1050	12,4-12,7

Torque-control travel on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1295-1310 min^{-1} 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ② rev/min 1	cm³/-1000 strokes 2	Control rod stop ③a rev/min 3	Fuel delivery characteristics ③b rev/min 4	cm³/-1000 strokes 5	Starting fuel delivery Idle speed ⑥ rev/min 6	Control rod travel mm cm³/1000 strokes 7
1250	80,0 - 81,0 (78,0 - 83,0)	-	800	85,0-87,0 (82,5-89,5)	100	105,0-115,0 (102,0-118,0)

Checking values in brackets

11.85

K18

K18

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 KHD 8,8 a 1

En 1. Edition

Testoil-ISO 4113

PES 4 A 95 D 410 RS 2424 RQ 300/1250 AB 1133 L

supersedes
company: TAM
engine: F 4 L 413 FR
94 kW (128 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,75-1,85 (1,7-1,9) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	9,7-9,8	9,1 - 9,3	0,3 (0,6)			
300	5,9-6,1	0,9 - 1,5	0,3 (0,5)			
750	10,1+0,2	C,Sp. 4 u. 5	0,4 (0,7)			
500						

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Checking of slider PRG check ① Control rod travel		Full-load speed regulation Setting point		Test specifications ④		Idle speed regulation Setting point		Test specifications ⑤		Torque control ③	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	8,7 4,0 1450	1290-1300 1350-1380 0-1,0	300	6,0	100 300 390-450 475	min. 7,5 5,9-6,1 =2,0 mm max.1,0	1250 600 830 895	9,7-9,8 10,1-10,2 9,9-10,1 9,7-10,0

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1290-1300 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever ② Test oil temp. 40°C (104°F)		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm³/-1000 strokes 2	rev/min 3	rev/min 4	cm³/-1000 strokes 5	rev/min 6	Control rod travel mm cm³/1000 strokes 7
1250	89,5 - 91,5 (87,5 - 93,5)	-	750	89,5 - 92,5 (87,5 - 94,5)	100	119,0 - 129,0 bei 14,0-14,6 mm RW
			500	81,0 - 84,0 (79,0 - 86,0)		

Checking values in brackets

K20

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 DAF 8,3 i 1

3. Edition

En

PE 6 A 90 D 410 RS 2524 RSV 250-1200 A 5 B 2012 DL

supersedes 12.80
company DAF
engine DH 825

** Cold start test on EP/RSV governor according to Service Information

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,25-2,45) 2,30-2,40 RW 9 mm (from BDC)

Port closing difference between control-rod travel 9 and max. 4,5-5,5°

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,4-9,5	7,0-7,1	0,3(0,45)			
250	6,5-6,7	0,9-1,5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in ▭

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.16	250	5,5	1000	9,4-9,5
	X =	3,0					100	min.19	400	9,4-9,6
ca.49 (2a)	1240-1250 = 8,4 1260-1290 = 4,0 1480 = 0,3-1,7					580-640	250 725	5,9-6,1 max.1,0	300	9,5+0,5

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle (5): rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
1000	70,0-71,0 (68,0-73,0)	1240-1250*	-	-	100	19,0-21,0 **	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

10.81

K21

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 v
2. Edition
En

PES 6 A 90 D 410 RS 2596 RQV 300-1400 AB 1066 DL

supersedes 10.79
company: Daimler-Benz
engine: OM 352 A
124 kW (169 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC) Cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,4-11,5	7,3-7,5	0,3(0,45)			
300	8,2- 8,4	0,9-1,5	0,2(0,4)			
500/500	-	C, 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
ca.68	1400	15,2-17,8	-	-	-	ca.15	100	min.9,8	300	1,2-1,3
	750	0 - 1					300	8,2-8,4	485	2,4-2,6
							730-790=2,0		1470	8,3
ca.	10,4	1460-1470				400-460				
	4,0	1585-1615				(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1400	0,35 bar 72,5-74,5 (70,5-76,5)	1460-1470*	LDA 500	0,35 bar 67,5-69,5 (65,5-71,5)	100	72,25-82,25	1400	11,4-11,5
							1220	11,5-11,8
			LDA 500	0 bar 52,0-54,5 (50,5-56,5)	100	220 (80-240)	1000	12,1-12,3
							500	11,5-11,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.80

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
2596 with 1066	0,35		12,5 - 12,6
		0,25	12,1 - 12,2
		0,10	11,3 - 11,5
		0	11,1 - 11,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1) and Governors

WPP 001/4 KHD 6,1 i
5. Edition
En

PES 6 A 85 D 410/3 RS 2415
Komb.-Nr. 0 400 836 023

RQV 300-1250 AB 1131 L

supersedes 3.84
company KHD
engine BF 6 L 913 T
96 KW at 2500 min^{-1}

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,9-2,0 (1,85-2,05) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,0+0,1	7,8 - 7,9	0,3(0,45)			
300	8,3-8,5	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1385	15,2-17,8	-	-	-	ca. 17	100	min. 10,0	250	0,9-1,1
ca. 65	11,0	1290-1300					300	8,3-8,5	580	3,9-4,1
	4,0	1400-1430					645-705	=2,0	920	5,4-5,6
	1525	0-1,0				450-550 (3a)			1250	7,8

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
1250	78,0-79,0 (76,0-81,0)	1290-1300*	600	71,5-73,5 (69,0-76,0)	100	105,0-115,0 (102,0-118,0) =17,4- 17,8 mm RW	1250	12,0+0,1
							600	12,8+0,1
							850	12,3+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

9.85

BOSCH
Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

K24

Test Specifications Fuel Injection Pumps ① and Governors

WPP 011/4 - OMB
1. Edition
En

PES 6 A 90 D 410 RS 2458 RQV 325-1050 AB 979 DL

supersedes -
company: OM-Brescia
engine

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	10,9+0,1	7,8-7,9	0,3(0,45)			
325	7,5-7,7	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1050	15,2-17,8	-	-	-	ca.18	100	min.10,0	300	1,4-2,4
							325	6,0-6,2	550	4,0-4,5
ca.66	9,9	1090-1100					440-500	= 2,0	800	5,6-6,0
	4,0	1150-1180					700	max.1,0	1050	8,2
	1300	0 - 1,0				350-450 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
1050	78,0-79,0 (76,0-81,0)	1090-1100*	500	66,0-69,0 (64,0-71,0)	100	15,0-15,6 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

11.81

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L1

L1

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 x
2. Edition
En

PES 6 A 90 D 410 RS 2293

RQV 300-1400 AB 1140 L
RQV 300-1400 AB 1141 L
RQV 300-1400 AB 1142 L

supersedes 4.81
company: Daimler-Benz
engine: OM 352 A
124,0 kW
(169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1375	11,3+0,1	7,4-7,5	0,3(0,45)			
300	7,6-7,8	0,9-1,5	0,2(0,4)			
500	10,4+0,1	5,4-5,6	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

Testoil-ISO 4113

B. Governor Settings

..AB 1140 L,..AB 1141 L,..AB 1142 L

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1140 1650	15,2-17,8 0 - 1,0	-	-	-	ca.15	100 300	min.9,2 7,6-7,8	250 600 950 1400	0,9-1,1 3,1-3,4 5,3-5,5 8,2
ca.61	9,8 4,0	1435-1445 1550-1580				350-475 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1375	0,7 bar 74,0-75,0 (72,0-77,0)	1435-1445*	LDA 500	0 bar 54,0-56,0 (52,0-58,0)	100	14,3-14,7 n	=700	

Checking values in brackets

* 1 mm less control rod travel than col. 2

10.81

L4

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1 375 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES6A..RS2293 ..AB1140L	0,7	0	11,3 - 11,4
with ..AB1141L		0,28	10,9 - 11,0
..AB1142L			11,1 - 11,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

L5

En

Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 5,7 x 1
2. Edition

En

PES 6 A 90 D 410 RS 2293 RQV 300-1400 AB 1138 L

supersedes 5.81
company: Daimler-Benz
engine: OM 352 A
124 kW (169 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,1-2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1375	11,3+0,1	7,4-7,5	0,3(0,45)			
300	7,6-7,8	0,9-1,5	0,2(0,4)			
500	10,9+0,1	C. Sp. 4u.5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500 1650	16,0-19,4 0 - 1,0	-	-	-	ca.15	100 300	min.9,2 7,6-7,8	250 600 1000 1400	0,9-1,1 3,1-3,4 5,5-5,7 8,2
ca.61	10,3 4,0	1435-1445 1550-1580				350-475 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation: intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1375	0,7 bar 74,0-75,0 (72,0-77,0)	1435-1445*	LDA 500	0 bar 54,0-56,0 (52,0-58,0)	100	14,3-14,7 mm RW	700	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 1 375 rev/min decreasing / increasing pressure - in bar gauge pressure MB 5,7 x 1 -2-

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS2293 with ..AB 1138 L	0,7		11,3 - 11,4
		0	10,9 - 11,0
		0,28	11,1 - 11,2

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 v
6. Edition
En

PES 6 A 90 D 410 RS 2596 RQV 300-1400 AB 1066 DL

supersedes 10.80
company: Daimler-Benz
engine. OM 352 A
124 kW (168 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,0-2,1 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,4+0,1	7,7-7,8	0,3(0,45)			
300	8,9-9,1	0,9-1,5	0,2(0,4)			
500	3,6+0,1		0,4(0,55)			
500	2,3+0,1	c, 4 - 5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐.

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm (1a) rev/min (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
ca.68	1400 1750	15,2-17,8 0 - 1,0	-	-	-	ca.19	100 300	min.10,5 8,9-9,1	250 630 1020 1400	0,7-0,9 3,8-3,9 5,3-5,5 7,7
ca.63	11,4 4,0	1440-1450 1580-1610				590-660 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b) (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 77,0-78,0 (75,0-80,0)	1440-1450*	LDA 500 LDA 500	0,7 bar 70,5-72,5 (68,5-74,5) 0 bar 56,0-58,0 (54,0-60,0)	100 Set rod	72,25-82,25 bei RW = 15,8-16,2mm stop at 3-3,5 mm travel	1400 1200 1000 control	12,4+0,1 12,5+0,3 13,1+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

10.81

L8

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution / difference mm (1)
RS 2596 with	0,7		13,6 - 13,7
AB 1055 DL		0,35	13,2 - 13,3
		0,2	12,5 - 12,7
		0	12,3 - 12,4

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

'40

WPP 001/4 MB 5,7 v 2
5. Edition

En

PES 6 A 90 D 410 RS 2596 RQV 300-1400 AB 1066-1 DL

supersedes 5.81
company: Daimler-Benz
engine: OM 352 A
126 kW (171 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,95-2,15 (2,00-2,10) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm e
1400	12,4+0,1	7,8-7,9	0,3(0,45)			
300	8,9-9,1	0,9-1,5	0,2(0,4)			
500	13,6+0,1	C. Sp. 4 - 5	0,4(0,55)			
500	12,3+0,1					

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1): rev/min 10	mm 11
max.	1500 1750	15,2-17,8 0 - 1	-	-	-	ca.19	100 300	min.10,5 8,9-9,1	300 500 1450	1,2 2,5-2,7 8,6
ca.62	11,4 4,0	1440-1450 1580-1610				590-660 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation (2b) intermediate speed (4a): rev/min 3	Fuel delivery characteristics (5a) high idle speed (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (6) Idle switching point: rev/min 6	cm³/1000 strokes 7	Torque-control (5) travel: rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 78,0-79,0 (76,0-81,0)	1440-1450*	LDA 500 LDA 500	0,7 bar 72,5-74,5 (70,5-76,5) 0 bar 58,0-60,0 (56,0-62,0)	100	72,25-82,25 15,8-16,2 RW 100-220 (80-240)	1400 1200 1000 500	12,4 12,5 13,1 13,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing / increasing pressure - in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution / difference mm (1)
PES 6A ..RS 2596 with ..AB1066-1 DL	0,7	0 0,35 0,2	13,6 - 13,7 12,3 - 12,4 13,2 - 13,3 12,5 - 12,7

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 v 8
2. Edition
En

PES 6 A 90 D 410 RS 2596 RQV 300-1400 AB 1151 L

supersedes
company: 4.81 Daimler-Benz
engine: OM 352 A 124 kW (169 PS)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,00-2,10 (1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,5+0,1	7,7-7,8	0,3(0,45)			
300	7,9-8,1	0,9-1,5	0,2(0,4)			
600	11,5+0,1		0,4(0,55)			
450	10,2+0,1	C, Sp. 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in [ ].

B. Governor Settings

Upper rated speed: Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min (1a) (2a) 3	Intermediate rated speed: Degree of deflection of control lever 4	rev/min 5	Control rod travel mm (4) 6	Lower rated speed: Degree of deflection of control lever 7	rev/min 8	Control rod travel mm (3) 9	Sliding sleeve travel (1) rev/min 10	mm 11
max.	1400 1700	15,2-17,8 0 - 1,0	-	-	-	ca.24	100 300	min.9,5 7,9-8,1	250 600 950 1400	0,9-1,1 3,1-3,4 5,2-5,5 8,2
ca. 61	10,5 4,0	1440-1450 1560-1590				350-500 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2): rev/min 1	cm³/1000 strokes 2	Rotational-speed limitation intermediate speed (2b): rev/min (4a) 3	Fuel delivery characteristics high idle speed (5a) (5b): rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle switching point (6): rev/min 6	cm³/1000 strokes 7	Torque-control travel (5): rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 77,0-78,0 (75,0-80,0)	1440-1450*	LDA 600	0,7 bar 63,0-65,0 (61,0-67,0)	100	- 72,25-82,25	-	-
			LDA 450	0 bar 42,0-44,0 (40,0-46,0)		at 14,8 - 15,2 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

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10.81

L12

D. Adjustment Test for Manifold Pressure Compensator

MB 5,7 v 8

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A..RS 2596 with ..AB 1151 L	0,7		11,5 - 11,6
		0	10,2 - 10,3
		0,29	11,1 - 11,2
		0,18	10,6 - 10,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

WPP 001/4 MB 5,7 q 2
6. Edition

PES 6 A 90 D 410 RS 2293 EP/RSV 350-1300 AOB788DL
EP/RSV 350-1400 AOB788DL

supersedes 11.79
company Daimler-Benz
engine OM 352 (A)
(150 PS - 1)
(168 PS - 2)

Dimension H = 22,5 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	11,0+0,1	7,0-7,1	0,3(0,45)	11,3+0,1	7,5-7,7	n = 1400
350	6,9-7,1	0,7-1,1	0,2(0,4)	6,7-6,9	0,7-1,1	
800/500	-	C 4-5	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

783 DL (1)

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4 5 6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
ca.59	1300 11,0-11,1 1340-1350=10,0 1405-1435= 4,0		without auxiliary spring	ca.23	350	7,0	1300	+0,1 11,0
					200	min.19	1000	11,2
					350	6,9-7,1		
(2a)	1300 ca.11,0 1550 0,3-1,7		with auxiliary spring		410-470 550	= 2,0 0 - 1	500	11,6

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery idle: rev/min 6	cm³/1000 strokes 7	(5) (4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1300	0,7 bar 70,0-71,0 (68,0-73,0)	1340-1350*	LDA 800	0,7 bar 65,5-68,5 (63,5-70,5)	100	13,7-14,3	before stop	0,5-1,0
			LDA 500	0 bar 54,0-56,0 (52,0-58,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

10.81

L14

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Testoil-ISO 4113

The numbers denote the sequence of the tests

B. Governor Settings

① Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	④ Control-lever deflection in degrees 7	Lower rated speed rev/min 8	Control rod travel mm 9	③ Torque control rev/min 10	Control rod travel mm 11
67-70	1400	11,3-11,4				19-21	350	6,8		+ 0,1
	1440-1475-	1450=10,3 1505= 4,0	without auxiliary spring				200	mind.19	1400	11,3
							350	6,7-6,9	650	11,3
	1145	ca. 10,3	with auxiliary spring				540-600	= 2,0	500	11,5
②a	1600	0,3- 1,7					700	0 - 1		

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min 1	cm³/1000 strokes 2	⑥ Rotational-speed limitat. Note: changed to ...) rev/min 3	③a Fuel delivery characteristics rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle ⑤ rev/min 6	cm³/1000 strokes 7	④a Idle stop rev/min 8	Control rod travel mm 9
LDA 1400	0,7 bar 74,0 - 75,0 (72,0 - 77,0)	1440-1450*	LDA 500	0,7 bar 62,0 - 64,0 (60,0 - 66,0)	100	13,7-14,3 mm RW		0,5-1,0
			LDA 500	0 bar 54,0 - 56,0 (52,0 - 58,0)			before stop	

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel-diminution difference mm (1)
2293 with 783 DL	0,39	0,29	0,1 - 0,2 0,5 - 0,7
2293 with 788 DL	0	0,285 0,500	10,8 - 10,9 11,1 - 11,2 11,5 - 11,6
Switching point (hydr. measurement)	0,40 - 0,50	0,15 - 0,25	10 - 12 mm RW 19 - 21 mm RW

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

WPP 001/4 EIC 3,9 b
4. Edition

En

PES 4 A 80 D 420 RS 1277 EP/RSV 300-1050 A 1 B 2052 DR

1 - 2 - 4 - 3 je 90° ± 0,50 (± 0,75)

supersedes 4.79
company Eicher
engine EDK 4 T, EDK 4-12
63 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1030	11.0	6,7 - 6,8	0,2(0,35)			
300	+ 0,1 7,9-8,1	1,7 - 2,3	0,2(0,3)			
750/500	- - -	C, Sp. 4-5	0,3(0,4)			

Adjust the fuel delivery from each outlet according to the values in ☐

Testoil-ISO 4113

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Control-lever deflection in degrees 7	Lower rated speed: rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11 + 0,1
loose	800	0,3-1,0				ca.24	300	7,5	1030	11,0
	X	= 4,5					100	min.19	810	11,9
							300	7,9-8,1		
ca. 55	10,0	1070-1080					515-575	≈ 2,0	500	12,8
(2a)	4,0	1095-1125					650	0 - 1		
	1300	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery (5) Idle: rev/min 6	cm³/1000 strokes 7	(4a) Idle stop: rev/min 8	Control rod travel mm 9
LDA 1030	0,8 bar 67,5-68,5 (66,0-70,0)	1070-1080*	LDA 750	0,8 bar 84,5-87,5 (83,0-89,0)	100	99,5-109,5	300	8,0
			LDA 500	0 bar 55,5-57,5 (54,0-59,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

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D. Adjustment Test for Manifold Pressure Compensator

EIC 3,9 b

Test at n = 500 rev/min decreasing / increasing pressure – in bar gauge pressure

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
1277 with 2052 D	0,80		12,7 - 12,8
		0,50	12,1 - 12,2
		0,23	11,3 - 11,5
		0	10,7 - 10,8

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

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(1A)

WPP 001/4 KHD 5,1 g 1

1. Edition

En

PES 6 A 85 D 410/3 RS 2611 RSV 325-1200 AOB 2148L

supersedes -

company KHD

engine F 6 L 913 tractor DX 120 84 kW (114 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,5-2,6 (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm (2) 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,3+0,1	6,9 - 7,0	0,3(0,45)			
325	8,4-8,6	0,9 - 1,5	0,2(0,4)			
800	12,0+0,1	C,Sp.4 u. 5	0,4(0,55)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in ☐

B. Governor Settings

(1) Upper rated speed rev/min: Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	Intermediate rated speed 4	5	6	(4) Lower rated speed: Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	(3) Torque control: rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.30	325	8,5	1200	11,3-11,4
	x	= 4,0					100	min.19,0	975	11,6-11,9
ca.56	10,3	1240-1250					325	8,4-8,6	500	12,0-12,1
(2a)	4,0	1305-1335					490-550	=2,0**		
	1425	0,3 - 1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

(2b) Full-load stop, Test oil temp. 40°C (104°F): rev/min 1	cm³/1000 strokes 2	(6) Rotational-speed limitat, Note changed to) rev/min 3	(3a) Fuel delivery characteristics: rev/min 4	cm³/1000 strokes 5	Starting fuel delivery Idle: rev/min 6	cm³/1000 strokes 7	(5) (4a) Idle stop: rev/min 8	Control rod travel mm 9
1200	69,5-70,5 (67,5-72,5)	1240-1250*	800	63,5-65,5 (61,5-67,5)	100	19,0-21,0	325	8,5

Checking values in brackets

* 1 mm less control rod travel than col 2

BOSCH Geschäftsbereich KH Kundendienst Kfz-Ausrüstung

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 d
4. Edition
En

PES 4 M 55 C 320 RS 60 EP/MN 60 M 46 DR (1)
EP/MN 60 M 42 DR (2)
EP/MN 60 M 51 DR (3)
EP/MN 60 M 43 DR (4)

supersedes 11.76
company Daimler-Benz
engine OM 616
(1/3-Pkw)
(2/4-Transporter)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,7 (+0,1)	3,9-4,1	0,2(0,25)			
250	9,0-9,2	0,4-1,0	0,15(0,2)			
1600/1000	Sect. C	col. 4-6	0,25(0,3)			

Testoil-ISO 4113

Adjust the fuel delivery from each outlet according to the values in [illegible]

B. Governor Settings

Torque control travel mm 1	Leakage Vacuum pressure drop mm water col. 2	Leakage Time at least s 3	Control-rod travel limitation breakaway* Vacuum mm w.c. 4	Control-rod travel limitation breakaway* Control rod travel mm 5	Control rod travel test Vacuum mm w.c 6	Control rod travel test Control rod travel mm 7	Auxiliary spring auxiliary cam** Vacuum mm w.c 8	Auxiliary spring auxiliary cam** Control rod travel mm 9	Torque control Vacuum mm w.c. 10	Torque control Control rod travel mm 11
1,1+0,1	500-480	10	520	13,7	580	9,2-13,7	675	9,2-10,2	150	14,8-14,9
					615	6,2-10,7	850	7,7- 8,7	250	14,4-14,8
			550-580*		675	3,2- 7,2			350	13,9-14,3
									520	13,7-13,8

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 – C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw Test oil temp 40°C (104°F) rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	Idle (stop)** idle (imbalance) rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle mm cm³/1000 strokes 8
2250	520	39,7-40,7 (38,7-41,7)	1600	360	38,9-40,5 (37,9-41,5)	500	600	3,2- 4,2
			1000	140	38,2-39,7 (37,2-40,7)	250	ca.880	4,5-10,5

Checking values in brackets

8.77

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.

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Notes:

1. Sliding-sleeve idle travel = 6.75 + 0.25 mm

2. Advance angle in idle - full load range = 34 - 42°

3. ** 3 At this engine speed, exceed control-rod travel by 0.4+0.1 mm; idle delivery must not be affected!

4. ***- "12.4 mm" - is the full-load control-rod travel set in Section A, 1-3.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 b
4. Edition

En

PES 4 M 55 C 320 RS 58 EP/MN 60 M 41 DR

supersedes 10.75
company Daimler-Benz
engine OM 616 - USA

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC) at max. RW

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,5 (+0,1)	3,8-4,0	0,2(0,25)			
250	9,1 (±0,1)	0,4-1,0	0,15(0,2)			
1600/1000	Sect. C,	col. 4-6	0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [illegible]

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w.c. 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
0,8+0,1	500-480	10	520	13,5	580	9,0-13,5	675	8,9-10,0	150	14,2-14,3
					675	3,2- 6,8	850	7,5- 8,6	300	14,0-14,3
			550 - 580*						375	13,6-13,9
									520	13,5-13,6

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp 40°C (104°F): rev/min 1	Vacuum mm wat. col 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat. col 5	cm³/1000 strokes 6	Idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat. col	Control road travel from full-load to idle: mm cm³/1000 strokes 8
2250	520	38,7-39,7 (37,7-40,7)	1600	370	38,2-39,7 (37,2-40,7)	500	600	3,2- 4,2
			1000	150	37,7-39,7 (36,7-40,7)	250	ca.620	4,5-10,5

Checking values in brackets

3.76

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Test Specifications Fuel Injection Pumps and Governors

VDT-WPP 001/4 MB 2,4 e
2. Edition
En

PES 4 M 55 C 320 RS 60 EP/MN 60 M 47 D

supersedes 12.75
company Daimler-Benz
engine OM 616 (Schweden)

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 (1,65-1,85) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm³/100 strokes 3	Difference cm³/100 strokes 4	Control rod travel mm 5	Fuel delivery cm³/100 strokes 6	Spring pre-tensioning (torque-control valve) mm 7
2250	13,4(±0,1)	3,8-4,0	0,2(0,25)			
250	9,1(±0,1)	0,4-1,0	0,15(0,2)			
1600/1000	Sect. C	col. 4-6	0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in [illegible]

B. Governor Settings

Torque control travel mm 1	Leakage: Vacuum pressure drop mm water col. 2	Leakage: Time at least s 3	Control-rod travel limitation breakaway*: Vacuum mm w.c. 4	Control-rod travel limitation breakaway*: Control rod travel mm 5	Control rod travel test: Vacuum mm w.c. 6	Control rod travel test: Control rod travel mm 7	Auxiliary spring auxiliary cam**: Vacuum mm w c 8	Auxiliary spring auxiliary cam**: Control rod travel mm 9	Torque control: Vacuum mm w.c. 10	Torque control: Control rod travel mm 11
1,1+0,1	500-480	10	520	13,4	580	8,5-13,5	675	9,2-10,0	150	14,5-14,7
					615	5,8-10,5	850	7,5- 8,6	250	14,2-14,6
			550 - 580*		675	2,7- 6,8			350	13,7-14,1
									520	13,4-13,5

control rod travel test (cols. 4-11)
= rotational speed 500 rev/min.
adjust breakaway (cols. 4-5) by means of shims*
cam adjustment (B 8-9 - C 7-8) by means of shims**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load stop screw, Test oil temp 40°C (104°F): rev/min 1	Vacuum mm wat col 2	cm³/1000 strokes 3	Fuel delivery characteristics: rev/min 4	Vacuum mm wat col 5	cm³/1000 strokes 6	idle (stop)** idle (imbalance): rev/min 7	Vacuum mm wat col	Control road travel from full-load to idle mm cm³/1000 strokes 8
2250	520	38,7-39,7 (37,7-40,7)	1600	360	37,9-39,5 (36,9-40,5)	500	600	3,2- 4,2
			1000	140	37,2-38,7 (36,2-39,7)	250	ca.850	4,5-10,5

Checking values in brackets

2.76

BOSCH Geschäftsbereich KH. Kundendienst. Kfz-Ausrüstung.